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Spawning Areas of British Columbia Herring: A Review, Geographical Analysis and Classification
Volume III: Upper Central Coast

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SPAWNING AREAS OF BRITISH COLUMBIA HERRING

A review, geographical analysis and classification

Volume III

Upper Central Coast

by

D. E. Hay, P. B. McCarter, R. Kronlund and C. Roy

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VOLUME III

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ABSTRACT

Hay, D. E., P. B. McCarter, R. Kronlund and C. Roy. 1989. Spawning areas of British Columbia herring: a review, geographical analysis and classification. Volume III. Upper Central Coast. Can. MS Rep. Fish. Aquat. Sci. 2019: 171 p.

The geographical distribution of herring spawning in British Columbia, was analysed for 50 years, from 1937 to 1986. The analyses was based on approximately 20,000 records of spawning made annually for different regions of the British Columbia coast by Fishery Officers. For each of about 90 geographical subdivisions of the coast, tables are presented to show the annual frequency of spawns in one kilometer segments of the coast. The intensity of spawning in specific areas is shown by histograms. Separate tables present a statistical summary of spawn records, including mean spawning dates. Tables summarizing roe fishery activity (1972-86) are shown for each location. A descriptive summary including a classification of the ecological importance of herring spawning habitat, is presented for each area.

Key words: herring, spawning, British Columbia

RÉSUMÉ

Hay, D. E., P. B. McCarter, R. Kronlund and C. Roy. 1989. Spawning areas of British Columbia herring: a review, geographical analysis and classification. Volume III. Upper Central Coast. Can. MS Rep. Fish. Aquat. Sci. 2019: 171 p.

Pendant 50 ans, plus précisément de 1937 à 1986, on a étudié la répartition géographique du frai de hareng en Colombie-Britannique. L'analyse se fonde sur des données extraites d'environ 20 000 rapports annuels sur le frai produits par les agents des pecheries à l'égard dediverses régions côtières de la Colombie-Britannique. Pour chacune des quelque 90 subdivisions géographiques de la côte, on a dressé des tableaux qui montrent la fréquence annuelle de frai dans des segments d'un kilomètre. Des histogrammes montrent l'intensité du frai dans les secteurs particuliers. Des tableaux distincts donnent un résumé statistique des données de frai, y compris les dates moyennes de frai. Il y a également des tableaux illustrant la peche de rogue (1972-1986) à chaque endroit. Chaque secteur fait également l'objet d'un résumé descriptif donnant une classification de l'importance écologique du milieu de frai du hareng.

Mots clés: hareng, frai, Colombie-Britannique

INTRODUCTION

In recent years there has been increased awareness and concern by industry, government and the public about the environmental protection of Pacific herring spawning grounds. A number of nearshore developments, such as oil exploratory activities and mariculture establishments could affect some inter- and subtidal spawning areas used by herring. Much of the British Columbia coast, perhaps 12% or more, has been used as a spawning site at least once during the last 50 years (Hay 1985). However, a much smaller proportion of the coast has been used for repetitive spawning over a number of years. The locations that support repetitive spawning deserve the most attention and consideration from possible environmental impacts. This report provides the basis for identifying significant herring spawning areas and locations which support major herring fisheries.

HERRING SPAWNING RECORDS

Detailed records of herring spawns in British Columbia are collected annually by Fishery Officers (Hay and Kronlund 1987). From 1928 to 1986 a total of nearly 20,000 records from over 1100 locations were recorded. The geographical size of a 'location' can vary from an island or cove measuring only 100 m in length or breadth, to bays or inlets more than 50 km in length. Also, geographical spawning locations frequently are 'clustered' so that sometimes many geographical names are used to describe the same general vicinity. Therefore, the continuity of spawnings cannot be examined by considering only single locations, rather, the adjacent locations should also be considered.

About 70% of all Fishery Officer spawn records have an accompanying map or chart showing the geographical position of each spawning. Records without charts consist of narratives or tables describing the position of each spawn relative to a fixed reference point, such as a Bay, Inlet, Island, etc. For spawn records with accompanying charts, we estimated the geographical positions of each spawn according to 0.1 km intervals along shorelines. This was done in all areas where herring were known to have spawned. Sub-divisions or 'sections' of the Statistical Areas (Hourston and Hamer 1979) were used as the smallest geographical unit. Most sections have a 'zero' position which increases, as high as necessary, to include all of the spawning locations. In several cases, spawning overlaps adjacent sections. In these instances, the spawn positions were made to be continuous between sections. Within most sections, herring spawning was not continuous along the shoreline throughout the whole section. Rather, spawning occurred in several different regions of the section, separated by distances without spawnings. This geographical discontinuity of spawning was reflected in the intervals. The 0.1 km intervals were not defined for the entire coastline but rather only for the

general vicinity of herring spawnings. Therefore, there are geographical gaps in the position numbers. Positions of spawning were defined for each of the 110 sections on the coast that had a sufficient number of records for analysis.

Positions were estimated for records that did not have accompanying charts (about 30%). Using the 70% of the records which did have accompanying charts, an average spawn postion was calculated for each (approximately 1100) location. These 'estimated' spawning positions are distinguished from the measured positions in the analysis. A few locations had no charted spawn positions or an insufficient number to make a reasonable estimate. In these relatively few instances we assigned an 'estimated position' to some location names. This assigned position is distinguished from the measured and estimated positions in the analysis.

The accuracy of the estimated spawn positions varied with the quality of the record. Some positions were provided on fine-scaled, detailed maps, which allowed an estimated spawn position in our analysis to within 0.1 km or finer. Sometimes, however, only coarse-scaled charts were available so the estimated spawn position was accurate only to 1.0 km or more. In practice, the least precise estimated position involved records with very long spawns, longer than 5 km.

THE FORMAT OF THIS REPORT

This report is organized into about 106 sections corresponding approximately to sections of the major Statistical Areas defined by the Department of Fisheries and Oceans (Hourston and Hamer 1979). Since the work was completed, however, there have been some minor changes in the Statistical Area boundaries. Also, there have been minor changes in the boundaries and names used for sections (Haist and Rosenfeld 1988). These changes, however, do not interfere with the geographical analysis presented in this report but for some future analyses, these new geographical modifications will have to be made.

For each section, geographical location figures and as many as five tables are presented in the following order:

(1) The first figure shows an overview chart of the location of the section (highlighted) relative to the whole north, or south coast of British Columbia. (2) The second figure shows a more detailed chart (or charts) in 1-km sections. For most of the figures, only every second km is labelled. (3) Spawn positions, in km segments, by year are summarized in the first table. The symbols on the charts are explained below. (4) The second table shows a histogram of the cumulative frequency of spawning per km segment for spawning data pooled over all years from 1937 to 1986. The symbols are explained below. (5) The third table is a statistical summary of spawning, by year from 1937 to 1986. Details of each of the columns in the table are explained below. (6) The fourth table is a summary narrative which briefly

summarizes and comments on highlights of the preceding data. (7) The last table shows the history of roe fishery catches summarized by location, date, time and hailed roe fishery catch, by gillnet and seines, in each area.

DERIVATION OF SPAWN POSITIONS USED IN THE TABLES

Analysis of spawn position by year (first table in each section)

For any single position on the coast, there are three types of spawn records:

(i) Type 1: records with a geographical name (for example, Departure Bay near Nanaimo) and a documented geographical position, supported by Fishery Officer chart or map;

(ii) Type 2: records with no charted position but with a geographical name that was used to describe locations of spawns. From Type 1 records, an 'average' position, in terms of average km segment, of each geographical name was calculated. For each geographical name, the position of all Type 2 records is shown relative to the 'average' position of the Type 1 records. All spawn data taken prior to 1951 and subsequent to 1983 fall into this category because we have not had the resources to measure the spawn positions.

(iii) Type 3: records with no charted position and a geographical name that was not ever used with 'type 1' spawns. Therefore, the only spawn position that can be used must be roughly estimated by comparing the approximate geographical position relative to the kilometer intervals extended from adjacent spawn records.

The three types of spawn records are shown with different symbols on the tables 'spawn position by year'. In general, most spawn records have the geographic location indicated on charts. Such a spawn record, for a given year and a specific km interval, is indicated by a digit from 1 to 9, representing from one to nine spawn records within that km interval. The digit '1' is the most common record (i.e., a single record) and it could represent a spawn record that occupied (a) the full length interval (i.e., a full km of spawn, perhaps as part of a longer spawning that extended on both sides of the interval) or (b) only part of the interval. For instance, a spawn record of 100 m length would be represented as '1', a single spawning record within that length interval. A spawn record of 500 or 900 m length also would be indicated as '1', or a single record. However, two short adjacent spawn records, say of 100 m length each and occurring within the same km interval, would be indicated by a '2'. Two records occurring at exactly the same place but at different periods would be indicated by a '2'. Similarly, three or more adjacent records within the km interval, or three spawns occurring at different times within the same years but within the km interval would be indicated by the respective digit from '3' to '9'. There are some instances of numerous records of short spawn records, more than nine

per km, and when this occurs the collective records are indicated by the asterisk symbol '*'.

For 'type 2' spawn records (where the geographical position of each record is estimated on the basis of the 'type 1' records with known positions) a single spawn record per km segment is indicated by the small case letter 'a'. Two records are indicated as 'b', three as 'c' and so on until a maximum of 26, shown as 'z'. Instances with more than 26 records per km are indicated with the symbol '#'. There are only a few instances of these symbols in the tables and when they occur, the represented positions are probably too tightly packed relative to the real positions of the spawns. For instance, sometimes when only a geographical name is used as the basis of the spawn position, then that name could apply either to a precise section of the coast (for example, Point Grey, which represents a relatively exact coastal position) or to a broad area (for example, Burrard Inlet which is many km in length). Therefore, type 2 records with geographical names that apply to broad areas will probably appear to be too condensed in the tables of spawn position by year.

Type 3 records are indicated by the hat symbol '^'. There is no attempt to indicated the number of such records per km interval. Therefore a single hat could indicate one or more type 3 spawn records per km segment.

Sometimes, there is more than one type of spawn record per single km interval. This sometimes happens in recent years when precise geographical names are used at one time as well as a new geographical name that has not been used before. Sometimes 'new' or additional names are used to describe some small, late spawns that occur 2-3 weeks after the main spawning activity.

The combination of different types of records, within a single km is as follows:

Record Combination	Symbol
type 1 records only	1 to 9, then '*' for 10 or more records
type 2 records only	a to z, then '#' for 27 or more records
type 3 records only	'^' for 1 or more records
type 1 plus type 2	'$' for 2 or more records
type 1 plus type 3	'ð' for 2 or more records
type 2 plus type 3	'ε' for 2 or more records
type 1 plus type 2 plus type 3	'%' for 3 or more records

Analysis of the cumulative spawn frequency by location (second table in each section)

The explanation of this table is similar to that of the first table. The total number of spawn records recorded for a single km interval is shown for each section. As discussed in the explanation for the first table,

there are three types of records of spawn. In this histogram, the cumulative frequency of type 1, 2 and 3 records is indicated by the symbols '*', 'O' and 'I' respectively and in the far right column, the total numbers of records per each km interval are indicated. For instance, a single record of a spawn with a known position, would appear as a '1' or '2' adjacent the '*' symbols. The number of intervals affected would depend on whether a single spawn overlapped the interval boundaries. Another example could be a 5 km spawn record, with a calculated spawn position (type 2) record, would be indicated by a '5' or '6' adjacent the 'O' symbols.

Statistical summary of spawning by location (third table in each section)

This table contains a number of columns that provide a year-by-year quantitative history of spawning, summarized for each section. The explanation for each column is described below:

Column	Heading	Explanation
1	Year	The documented year, between 1937 and 1986.
2	Total records	The total number of spawn records (spawn occurrences) per year.
3	Spawn index	An estimate of the area of spawn (m^2) based on conversion factors that correct for the time trends in estimates of spawn intensity and spawn width (see Hay and Kronlund 1987).
4	Sum length	The total length of spawn in metres, for each year.
5	Av wid	The average width of spawn in metres, for each year.
6	Av int	The average intensity of spawn on a scale of 1 (very light) to 9 (very heavy) (For further explanation, see Hay and Kronlund 1987).
7	Av date	The average spawning date presented by the Day of the year (DOY) where Jan. 1 = DOY 1, Jan. 2 = DOY 2, Feb. 1 = 32 DOY, and so on.
8	SE date	The standard error of the mean weighted spawn date.
9	Wt date	The average weighted spawning date. The date (DOY) of each record is 'weighted' by the length of each record. In most instances, the weighted and unweighted are nearly identical.
10	Min day	The earliest spawn date recorded each year, by DOY
11	Max day	The latest spawn date recorded each year, by DOY

12	Ind day	The number of different days over which spawnings occurred. A single spawn record on a single day would be 1. One single record extending over 5 days would be 5, etc.
13	Ind loc	The number of different spawning locations used. For the total coast, there are a total of about 1100 locations. If there were 10 separate small spawns within the same location, the number would be 1.

Herring spawn summary by location (fourth table in each section)

This table is a narrative based on the following criteria. The 'SPAWNING CONSISTENCY OVER TIME' is described as: (i) 'INFREQUENT' if the spawns were recorded in less than 50 percent of documented years, (ii) 'FREQUENT' if the spawns were recorded in 50 to 79 percent of documented years and (iii) 'CONSTANT' if the spawns were recorded in 80 to 100 percent of documented years. The 'MAGNITUDE OF SPAWNINGS' assessed from 1937 to 1986 for each section is described as: (i) 'VERY SMALL' if there was less than 50 hectares of cumulative spawn area, (ii) 'SMALL' if there was 50-200 hectares of cumulative spawn area, (iii) 'MEDIUM' if there was 201-500 hectares of cumulative spawn area, (iv) 'LARGE' if there was 501-1500 hectares of cumulative spawn area and (v) 'VERY LARGE' if there was greater than 1500 hectares of cumulative spawn area.

The history of roe fishery catches by gear type and by location (fifth table in each section)

This table is based on the hailed catches, as reported in annual information bulletins or industry reports (Chalmers et al. 1981, 1982, 1985, 1986 and Humphreys et al. 1972, 1973 and Webb et al 1974, 1975, 1979 and 1980). Catches, in short tons, hailed on the grounds were cited here as they are the most accurate representation of the LOCATION of catches. They may differ from tables reported in the annual catch summaries or stock assessments and forecast reports (Haist et al. 1988) because these documents are usually based on sales slip records. These other reports should be consulted if more accurate total catch figures by major area are required. Furthermore, the first year of the roe fishery (1971) was not included in this compilation due to incomplete or inconsistent records. Also, it should be noted that hailed catches in parenthesis in table 5 indicates herring catch was from two or more sections.

LIMITATIONS AND APPLICATIONS OF THESE ANALYSES

The precise geographical limits of herring spawning probably are accurate to within a kilometer, more in some specific sites and less in others. The original Fishery Officer records were made with varying degrees

of precision and the degree of precision often depends on the area of the spawning or survey; areas which have a lot of relatively fine-scale geographical detail, such as the Gulf Islands in southern Georgia Strait, probably are more accurate than areas with fewer geographical details, such as the relatively straight shoreline between Parksville and Deep Bay. In general however, the summaries presented here should be reasonable indicators of spawning activity to the nearest kilometer.

This geographical compilation and historical synopsis of herring spawns represents the culmination of several earlier but briefer versions. One of the earlier analyses, presented at the Annual Herring Stock Assessment Meetings as PSARC WORKING PAPER 86-5, had widespread distribution and was used for examination and evaluation of ecologically sensitive areas relative to potental impacts from oil exploration activities and mariculture developments.

During the several years of preparatory work that has gone into this project, we often have heard the criticism that the herring spawning data base has limited value because of alleged errors and omissions in the records. The most frequently cited error attributed to the records is that the data collected on the spawn dimensions were made in a sloppy way and "often by the cook on a patrol vessel"; alternately, we have heard that some Fishery Officers could not be bothered to go out and look for herring spawn rather, they simply noted the presence or absence of seabirds and assumed that herring spawn occurred wherever birds occurred. Undoubtably, some of these stories are correct, but probably for not more than a few of the nearly 20,000 records used in these analysis. Based on detailed examination of the original records, it is clear that the overwhelming majority of the Fishery Officers who report on herring spawns, do it in a dedicated, professional and competent manner, often with detailed comments and charts accompanying the records.

There are, nevertheless, two kinds of systematic error in these records which should be mentioned. The first appears to be a time-dependent trend for Fishery Officers to underestimate spawn width. This occurred mainly in the earlier years, when it was generally believed that most of the spawn was confined to the inter-tidal zone. It has not been until relatively recent times that the significance of the subtidal fraction has been appreciated (Haegele et al. 1983). Also, there has been systematic changes in the spawn intensity measurements, in part reflecting changes in the measurement or rating criteria used over the years (see Hay and Kronlund 1987 for more detail). However, neither of these systematic errors have any effect on the analysis in the present study, which does not involve any presentation of the 'spawn index' which is fully described in Hay and Kronlund (1988). The only other kind of error in the records which can severely affect conclusions presented in these analyses, is that of incompleteness. It is clear that for some locations, records were not collected systematically each year. As much as possible we have attempted to comment on this in the narrative summary tables.

The data and analysis that are presented in this document have been available for the last two years, on request, to anyone with an interest in the historical distribution of herring spawning areas. The analyses already have been used many times for examinations of impacts of different nearshore developments. It appears that one of the most useful aspects of the analyses is that some areas are identified clearly as important spawning locations and

others, with no history of herring spawns, are shown to be not important. There are many locations or km segments, however, which are in between. They have a record of spawning which varies in time. These 'intermediate' spawning locations are the most difficult to evaluate in terms of their importance in maintaining the well being of the herring resource.

In general, we suggest that it is essential to conserve the spawning areas that have a history of repetitve spawning over time. Also, areas immediately adjacent to spawning areas must be protected. Ultimately however, each instance of a nearshore development that might impact herring spawning areas must be decided on its own merits and it should be kept in mind that we still do not understand why some areas are used as spawning areas and others are not. Some locations which are not known as spawning areas appear to have the appropriate vegetative substrate and local oceanographic regimes that are found in documented spawning areas (Hay et al. 1984). Further, herring 'enhancement' does not appear to be possible at the present time (Hay and Marliave 1988). Therefore, if herring spawning habitat is lost, we cannot necessarily expect the impacted stocks to spawn in other locations nor can we realistically expect that new spawning habitat can be created. Finally, throughout this report we have commonly used the word "stock" or "resident stock" that refer to herring that inhabit an area. This usage is for convenience only, and cannot be used as an indicator of any particular uniqueness (genetic or otherwise) of herring from one place to the other.

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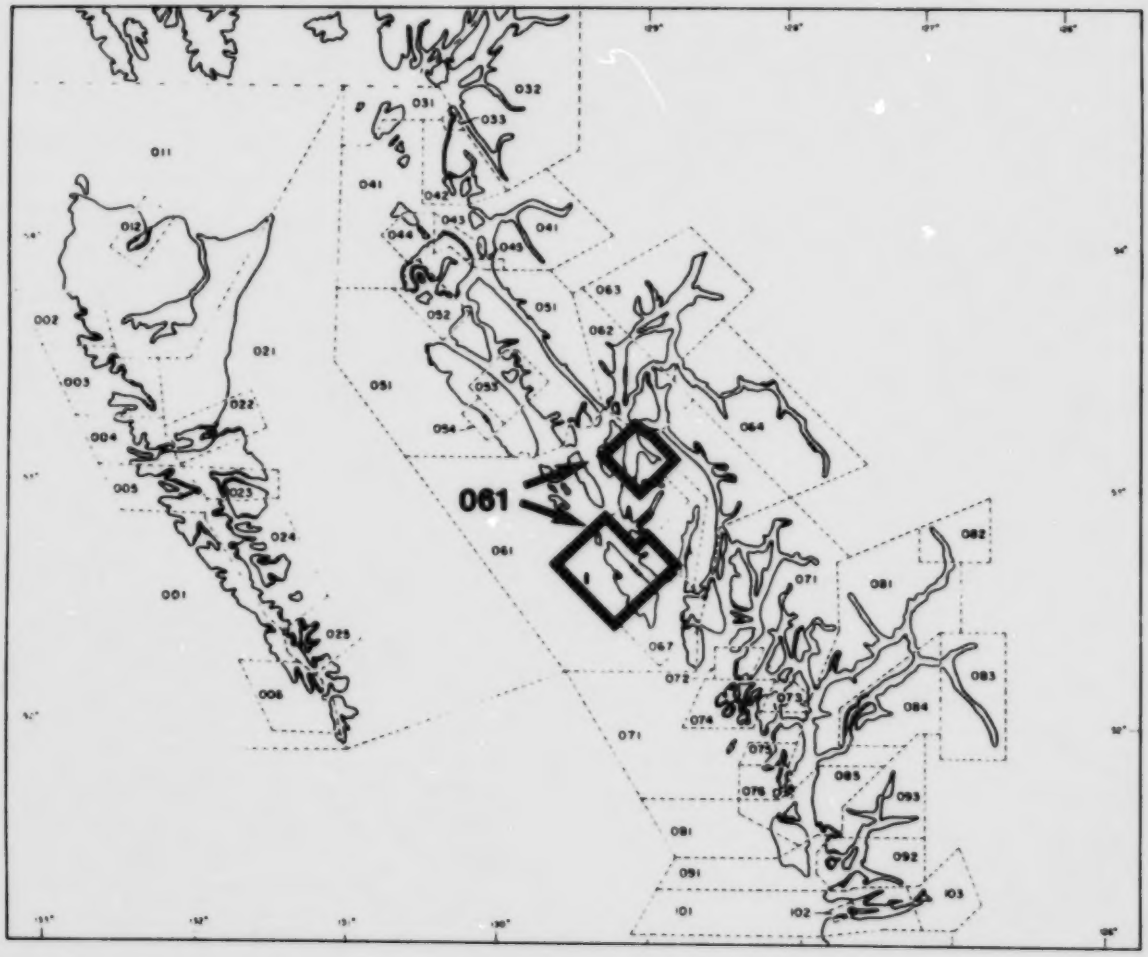
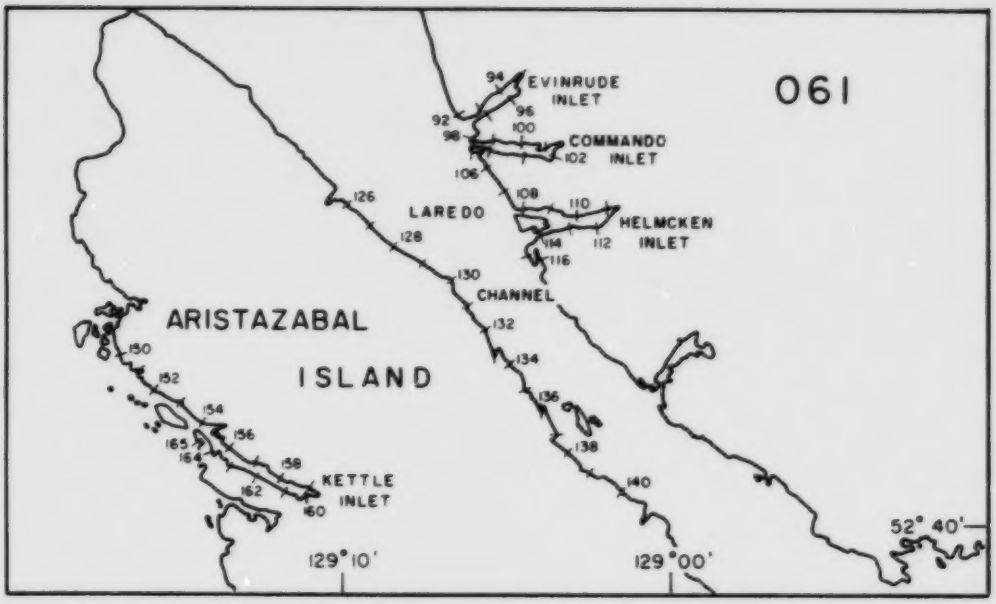


Fig. 061-1. Overview map showing location of section 061, Other Area 6.



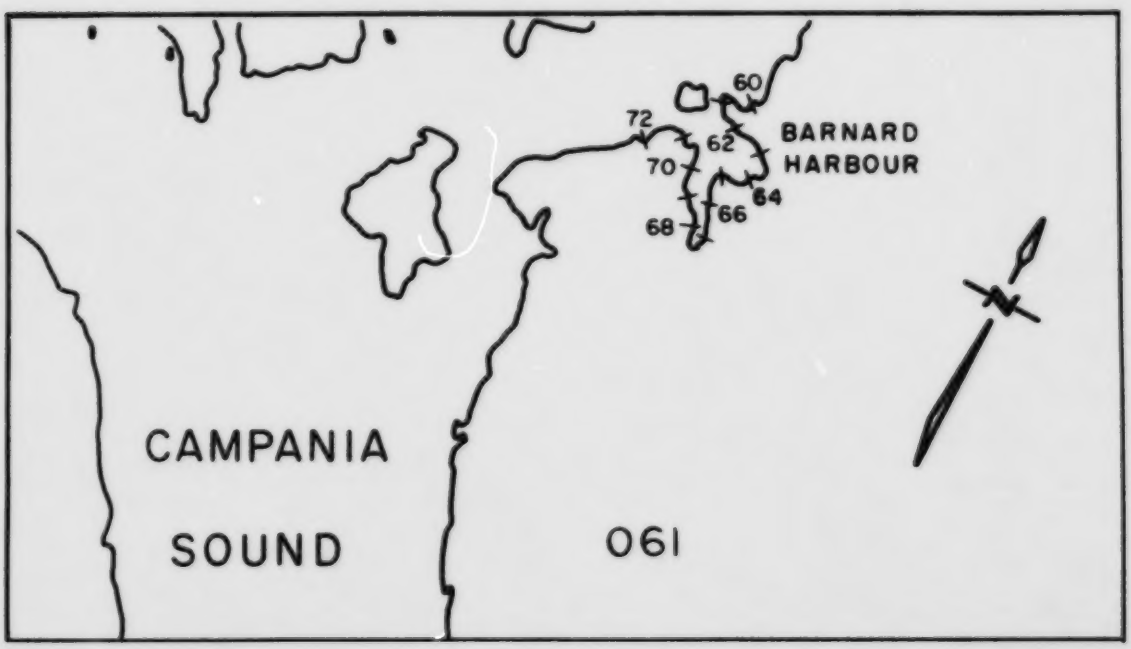


Fig. 061-2. Detailed map of section 061, Other Area 6.

Table 061-1. Section 061 - spawn position by year.

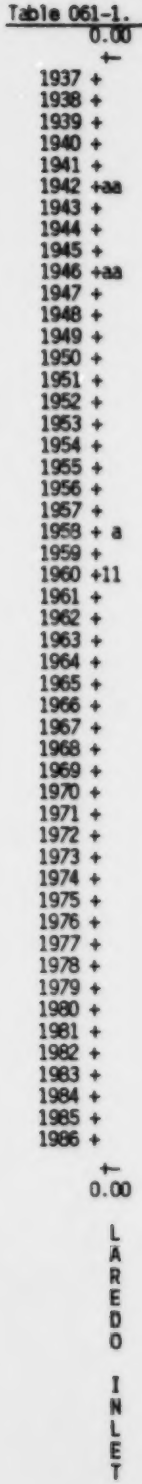


Table 061-2. Section 061 - histogram of cumulative spawn frequency over distance

LAREDO INLET

position(km)

	0 5 10 15 20 25 30 35 40 45 50 55 60 65 70 75	vara	varb	varc	all
0.00	+*00				
1.00	+*000	1	2	0	3
2.00	+*00	1	3	0	4
3.00	+00	1	2	0	3
4.00	+0	0	2	0	2
5.00	+0	0	1	0	1
6.00	+0	0	1	0	1
7.00	+	0	1	0	1
8.00	+	0	0	0	0
9.00	+	0	0	0	0
10.00	+	0	0	0	0
11.00	+	0	0	0	0
12.00	+	0	0	0	0
13.00	+	0	0	0	0
14.00	+	0	0	0	0
15.00	+	0	0	0	0
16.00	+	0	0	0	0
17.00	+	0	0	0	0
18.00	+	0	0	0	0
19.00	+	0	0	0	0
20.00	+	0	0	0	0
21.00	+	0	0	0	0
22.00	+	0	0	0	0
23.00	+	0	0	0	0
24.00	+	0	0	0	0
25.00	+	0	0	0	0
26.00	+	0	0	0	0
27.00	+	0	0	0	0
28.00	+	0	0	0	0
29.00	+	0	0	0	0
30.00	+	0	0	0	0
31.00	+	0	0	0	0
32.00	+	0	0	0	0
33.00	+	0	0	0	0
	0 5 10 15 20 25 30 35 40 45 50 55 60 65 70 75	vara	varb	varc	all

Table 061-2 (cont'd.)

position(km)

	0 5 10 15 20 25 30 35 40 45 50 55 60 65 70 75	vara	varb	varc	all
34.00	+	0	0	0	0
35.00	+	0	0	0	0
36.00	+	0	0	0	0
37.00	+	0	0	0	0
38.00	+	0	0	0	0
39.00	+	0	0	0	0
40.00	+	0	0	0	0
41.00	+	0	0	0	0
42.00	+	0	0	0	0
43.00	+	0	0	0	0
44.00	+	0	0	0	0
45.00	+	0	0	0	0
46.00	+	0	0	0	0
47.00	+	0	0	0	0
48.00	+	0	0	0	0
49.00	+	0	0	0	0
50.00	+	0	0	0	0
51.00	+	0	0	0	0
52.00	+	0	0	0	0
53.00	+	0	0	0	0
54.00	+	0	0	0	0
55.00	+	0	0	0	0
56.00	+	0	0	0	0
57.00	+	0	0	0	0
58.00	+	0	0	0	0
59.00	+	0	0	0	0
60.00	+	0	0	0	0
61.00	+	0	0	0	0
62.00	+	0	0	0	0
63.00	+	0	0	0	0
64.00	+II	0	0	2	2
BARNARD HARBOUR 65.00	+II	0	0	2	2
66.00	+	0	0	0	0
67.00	+	0	0	0	0
68.00	+	0	0	0	0
	0 5 10 15 20 25 30 35 40 45 50 55 60 65 70 75	vara	varb	varc	all

Table 061-2 (cont'd.)

position(km)

	0 5 10 15 20 25 30 35 40 45 50 55 60 65 70 75	vara	varh	varc	all
69.00	+	0	0	0	0
70.00	+	0	0	0	0
71.00	+	0	0	0	0
72.00	+	0	0	0	0
73.00	+	0	0	0	0
74.00	+	0	0	0	0
75.00	+	0	0	0	0
76.00	+	0	0	0	0
77.00	+	0	0	0	0
78.00	+	0	0	0	0
79.00	+	0	0	0	0
80.00	+	0	0	0	0
81.00	+	0	0	0	0
82.00	+	0	0	0	0
83.00	+	0	0	0	0
84.00	+	0	0	0	0
85.00	+	0	0	0	0
86.00	+	0	0	0	0
87.00	+	0	0	0	0
88.00	+	0	0	0	0
89.00	+	0	0	0	0
90.00	+	0	0	0	0
91.00	+	0	0	0	0
92.00	+	0	0	0	0
93.00	+I	0	0	1	1
94.00	+I	0	0	1	1
95.00	+II	0	0	2	2
EVINRUDE INLET 96.00	+II	0	0	2	2
97.00	+I	0	0	1	1
98.00	+I	0	0	1	1
99.00	+	0	0	0	0
100.00	+	0	0	0	0
101.00	+I	0	0	1	1
COMMANDO INLET 102.00	+I	0	0	1	1
103.00	+	0	0	0	0
	0 5 10 15 20 25 30 35 40 45 50 55 60 65 70 75	vara	varh	varc	all

Table 061-2 (cont'd.)

	position(km) 0 5 10 15 20 25 30 35 40 45 50 55 60 65 70 75	vara	varb	varc	all
	104.00 +	0	0	0	0
	105.00 +	0	0	0	0
	106.00 +	0	0	0	0
	107.00 +	0	0	0	0
	108.00 +	0	0	0	0
	109.00 +	0	0	0	0
	110.00 +III	0	0	3	3
HELMCKEN INLET	111.00 +III	0	0	3	3
	112.00 +	0	0	0	0
	113.00 +	0	0	0	0
	114.00 +	0	0	0	0
	115.00 +	0	0	0	0
	116.00 +	0	0	0	0
	117.00 +	0	0	0	0
	118.00 +	0	0	0	0
	119.00 +	0	0	0	0
	120.00 +	0	0	0	0
	121.00 +	0	0	0	0
	122.00 +	0	0	0	0
	123.00 +	0	0	0	0
	124.00 +	0	0	0	0
	125.00 +	0	0	0	0
	126.00 +	0	0	0	0
	127.00 +	0	0	0	0
	128.00 +	0	0	0	0
	129.00 +	0	0	0	0
	130.00 +	0	0	0	0
	131.00 +	0	0	0	0
	132.00 +	0	0	0	0
	133.00 +	0	0	0	0
	134.00 +II	0	0	2	2
LAREDO CHANNEL	135.00 +II	0	0	2	2
	136.00 +	0	0	0	0
	137.00 +	0	0	0	0
	138.00 +	0	0	0	0
	0 5 10 15 20 25 30 35 40 45 50 55 60 65 70 75	vara	varb	varc	all

Table 061-2 (cont'd.)

position(km)

	0 5 10 15 20 25 30 35 40 45 50 55 60 65 70 75	vara	varb	varc	all
139.00	+	0	0	0	0
140.00	+	0	0	0	0
141.00	+	0	0	0	0
142.00	+	0	0	0	0
143.00	+	0	0	0	0
144.00	+	0	0	0	0
145.00	+	0	0	0	0
146.00	+	0	0	0	0
147.00	+	0	0	0	0
148.00	+	0	0	0	0
149.00	+	0	0	0	0
150.00	+	0	0	0	0
151.00	+	0	0	0	0
152.00	+	0	0	0	0
153.00	+	0	0	0	0
154.00	+	0	0	0	0
155.00	+	0	0	0	0
156.00	+	0	0	0	0
157.00	+	0	0	0	0
158.00	+	0	0	0	0
159.00	+IIIIIII	0	0	7	7
KETTLE INLET 160.00	+IIIIIII	0	0	7	7
161.00	+	0	0	0	0
	0 5 10 15 20 25 30 35 40 45 50 55 60 65 70 75	vara	varb	varc	all

Table 061-3. Herring statistical spawn summary for section 061.

Year	Total records	Spawn index	Sum length	Av wid	Av int	Av date	SE date	Wt date	Min day	Max day	Ind day	Ind loc
1937	0	0	0	0	0.0	0.0	0.00	0.0	0	0	0	0
1938	0	0	0	0	0.0	0.0	0.00	0.0	0	0	0	0
1939	0	0	0	0	0.0	0.0	0.00	0.0	0	0	0	0
1940	0	0	0	0	0.0	0.0	0.00	0.0	0	0	0	0
1941	0	0	0	0	0.0	0.0	0.00	0.0	0	0	0	0
1942	3	150999	7220	18	7.0	95.7	0.33	95.5	95	96	2	3
1943	0	0	0	0	0.0	0.0	0.00	0.0	0	0	0	0
1944	1	26770	1280	27	7.0	94.0	0.00	94.0	94	94	1	1
1945	0	0	0	0	0.0	0.0	0.00	0.0	0	0	0	0
1946	2	138597	6627	8	7.0	94.5	2.50	92.2	92	97	2	2
1947	0	0	0	0	0.0	0.0	0.00	0.0	0	0	0	0
1948	2	107059	5119	6	7.0	101.0	0.00	101.0	101	101	1	2
1949	2	55422	2650	13	7.0	97.5	0.50	97.4	97	98	2	2
1950	0	0	0	0	0.0	0.0	0.00	0.0	0	0	0	0
1951	0	0	0	0	0.0	0.0	0.00	0.0	0	0	0	0
1952	0	0	0	0	0.0	0.0	0.00	0.0	0	0	0	0
1953	0	0	0	0	0.0	0.0	0.00	0.0	0	0	0	0
1954	0	0	0	0	0.0	0.0	0.00	0.0	0	0	0	0
1955	0	0	0	0	0.0	0.0	0.00	0.0	0	0	0	0
1956	0	0	0	0	0.0	0.0	0.00	0.0	0	0	0	0
1957	0	0	0	0	0.0	0.0	0.00	0.0	0	0	0	0
1958	1	1903	91	46	3.0	93.0	0.00	93.0	93	93	1	1
1959	1	5730	274	5	3.0	94.0	0.00	94.0	94	94	1	1
1960	1	47788	2285	7	5.0	94.0	0.00	94.0	94	94	1	1
1961	0	0	0	0	0.0	0.0	0.00	0.0	0	0	0	0
1962	0	0	0	0	0.0	0.0	0.00	0.0	0	0	0	0
1963	1	565	27	1	1.0	96.0	0.00	96.0	96	96	1	1
1964	0	0	0	0	0.0	0.0	0.00	0.0	0	0	0	0
1965	0	0	0	0	0.0	0.0	0.00	0.0	0	0	0	0
1966	0	0	0	0	0.0	0.0	0.00	0.0	0	0	0	0
1967	0	0	0	0	0.0	0.0	0.00	0.0	0	0	0	0
1968	0	0	0	0	0.0	0.0	0.00	0.0	0	0	0	0
1969	0	0	0	0	0.0	0.0	0.00	0.0	0	0	0	0
1970	0	0	0	0	0.0	0.0	0.00	0.0	0	0	0	0
1971	0	0	0	0	0.0	0.0	0.00	0.0	0	0	0	0
1972	0	0	0	0	0.0	0.0	0.00	0.0	0	0	0	0
1973	0	0	0	0	0.0	0.0	0.00	0.0	0	0	0	0
1974	0	0	0	0	0.0	0.0	0.00	0.0	0	0	0	0
1975	0	0	0	0	0.0	0.0	0.00	0.0	0	0	0	0
1976	0	0	0	0	0.0	0.0	0.00	0.0	0	0	0	0
1977	0	0	0	0	0.0	0.0	0.00	0.0	0	0	0	0
1978	0	0	0	0	0.0	0.0	0.00	0.0	0	0	0	0
1979	0	0	0	0	0.0	0.0	0.00	0.0	0	0	0	0
1980	0	0	0	0	0.0	0.0	0.00	0.0	0	0	0	0
1981	0	0	0	0	0.0	0.0	0.00	0.0	0	0	0	0
1982	4	38105	1822	11	0.0	73.0	0.00	73.0	73	73	1	1
1983	0	0	0	0	0.0	0.0	0.00	0.0	0	0	0	0
1984	0	0	0	0	0.0	0.0	0.00	0.0	0	0	0	0
1985	5	118373	5660	7	0.0	84.0	24.49	142.9	44	144	2	2
1986	2	81355	3890	9	0.0	170.0	0.00	170.0	170	170	1	1
All	25	772668	36945	12	5.9	95.8	6.57	109.6	44	170	12	8

Table 061-4. Spawn summary for section 061 from 1937 to 1986.

A. GENERAL:

There are three main spawning areas in this section:
(i) Laredo Channel including Evinrude, Commando and Helmcken Inlets
(ii) Kettle Inlet and
(iii) Barnard Harbour

B. COMPLETENESS OF RECORDS:

Probably all spawning records prior to 1942 are incomplete.

C. SPAWNING CONSISTENCY OVER TIME: INFREQUENT

There have been intermittent spawnings from 1942 to 1963 and 1982 to 1986 with no recorded spawnings in other years.

D. MAGNITUDE OF SPAWNINGS: SMALL

1. NUMBER OF SPAWN YEARS/50 YEARS	= 12/50 (1937-86)
2. NUMBER OF SPAWN YEARS/DOCUMENTED YEARS	= 12/45 (1942-86)
3. CUMULATIVE SPAWN LENGTH	= 37.0 Km.
4. CUMULATIVE SPAWN AREA	= 77.3 ha.

E. SPAWNING TIME:

1. MEAN UNWEIGHTED DATE (DOY)	= April 6 (95.8)
2. MEAN WEIGHTED DATE (DOY)	= April 20 (109.6)

F. COMMENTS:

The similarity of spawning dates and approximate geographical proximity suggest that the infrequent spawnings in this section belong to the much larger Kitasu spawning stock to the southeast in section 067.

G. ROE FISHERIES:

No major roe fisheries are documented.

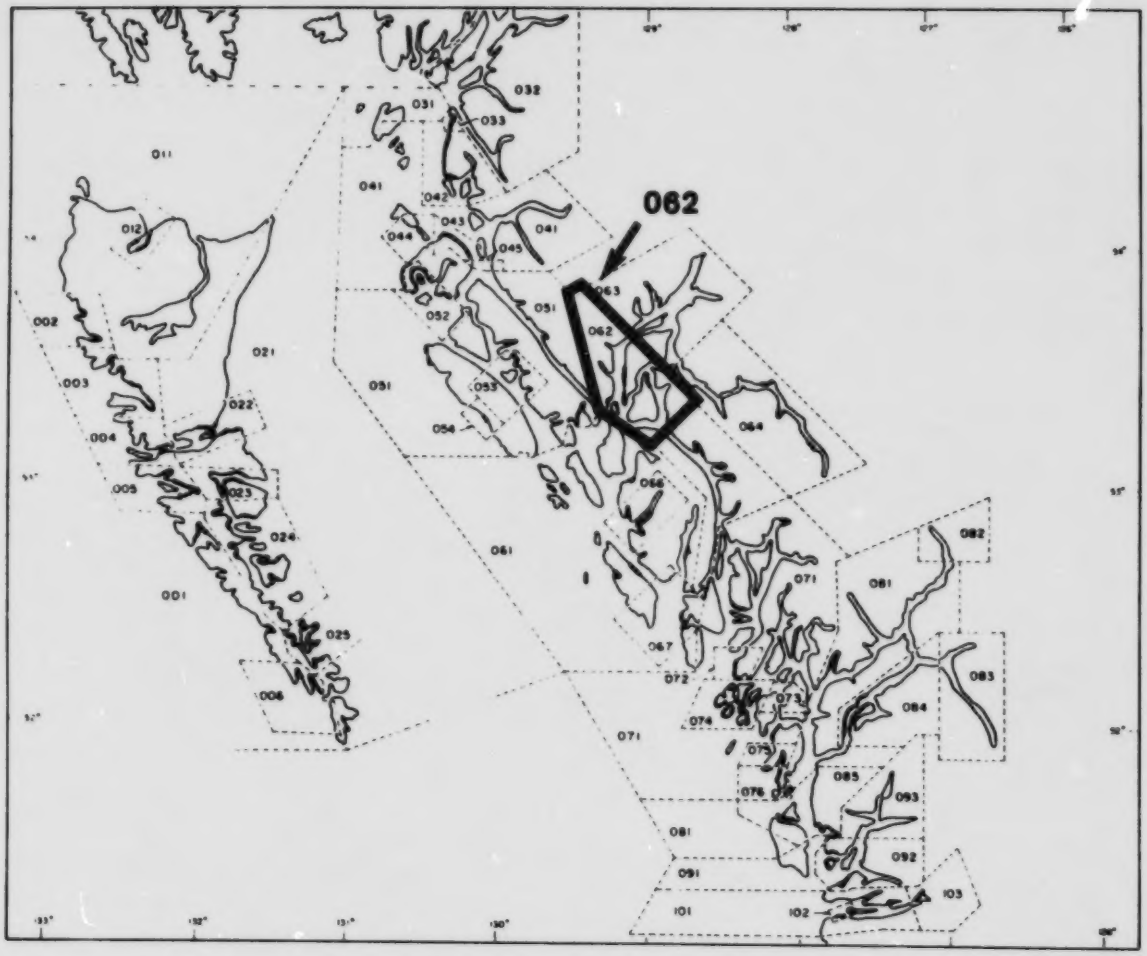


Fig. 062-1. Overview map showing location of section 062, Promise Island.

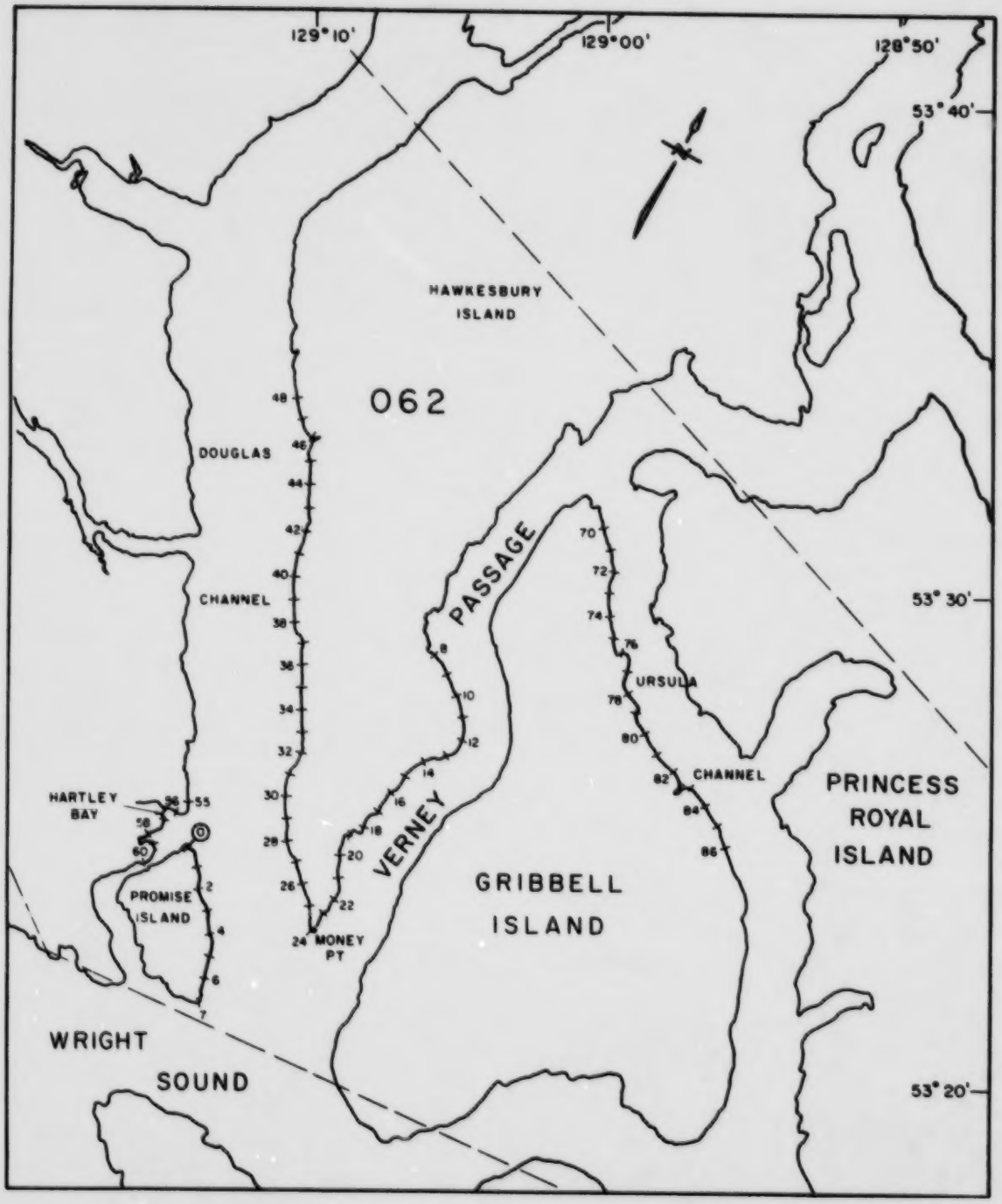


Fig. 062-2. Detailed map of section 062, Promise Island.

Table 062-1. Section 062 - spawn position by year.

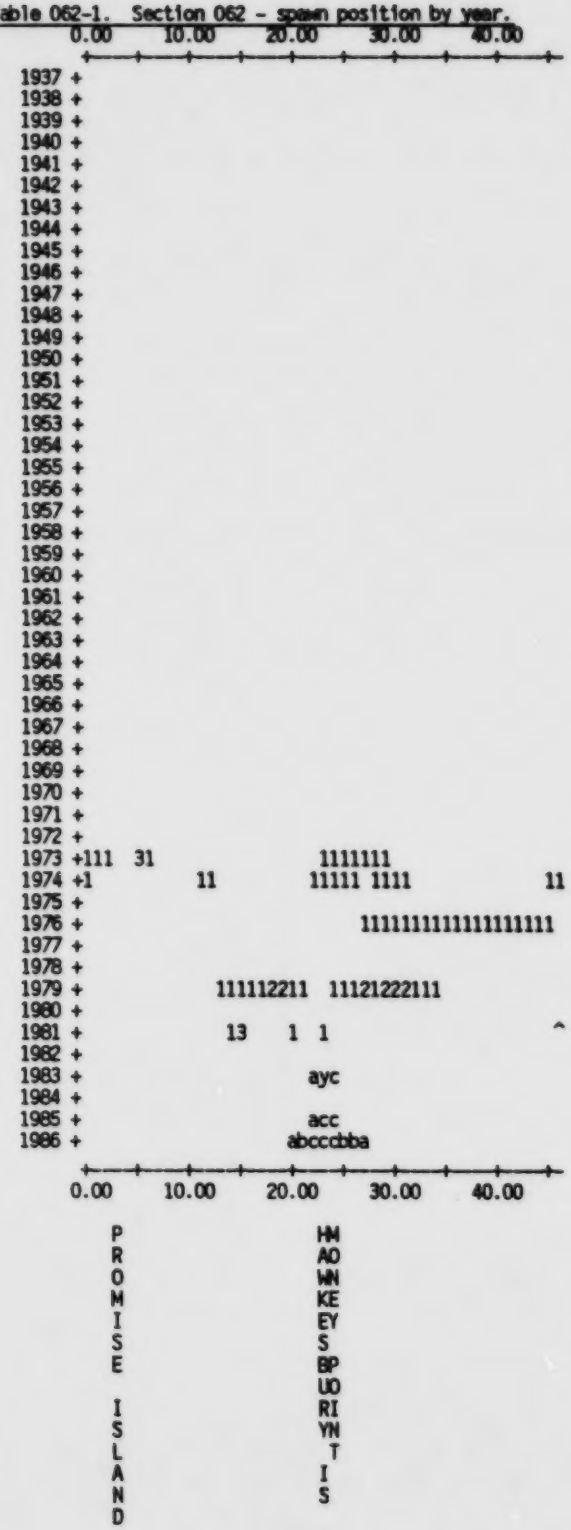


Table 062-2. Section 062 - histogram of cumulative spawn frequency over distance

position(km)

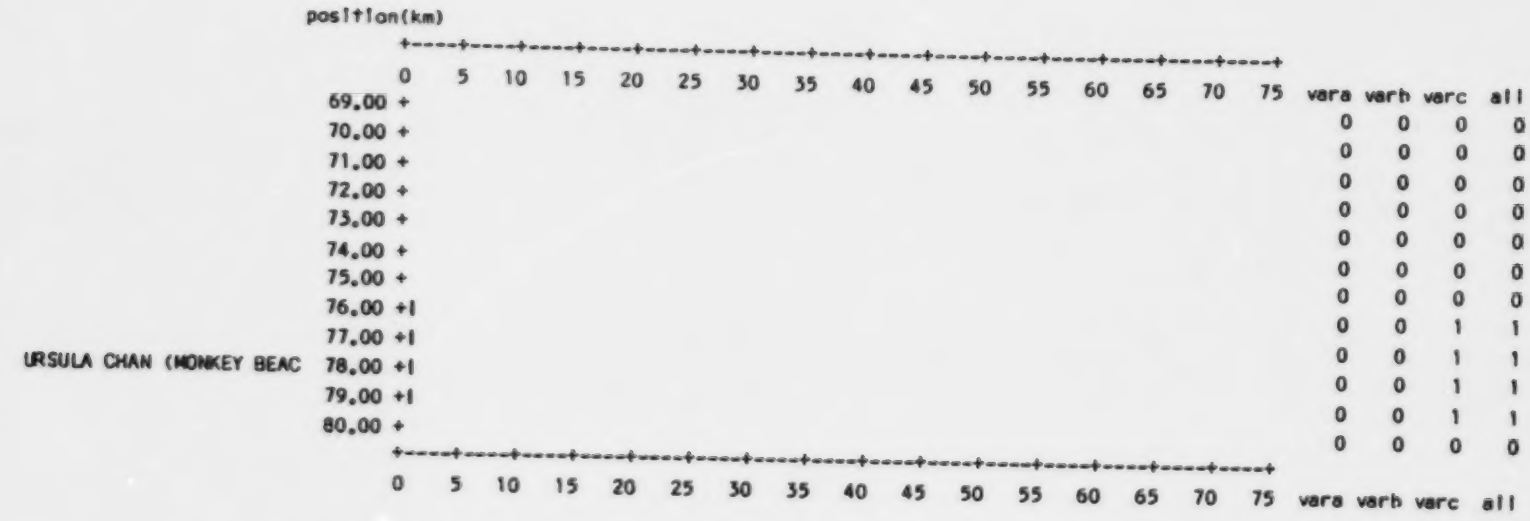
		0 5 10 15 20 25 30 35 40 45 50 55 60 65 70 75	vare	varb	varc	all
	0.00	+**	2	0	0	2
	1.00	+*	1	0	0	1
	2.00	+*	1	0	0	1
PROMISE ISLAND	3.00	+	0	0	0	0
	4.00	+	0	0	0	0
	5.00	+***	3	0	0	3
	6.00	+*	1	0	0	1
	7.00	+	0	0	0	0
	8.00	+	0	0	0	0
	9.00	+	0	0	0	0
	10.00	+	0	0	0	0
	11.00	+*	1	0	0	1
	12.00	+*	1	0	0	1
	13.00	+*	1	0	0	1
	14.00	+**	2	0	0	2
	15.00	+****	4	0	0	4
	16.00	+*	1	0	0	1
	17.00	+*	1	0	0	1
	18.00	+**	2	0	0	2
	19.00	+**	2	0	0	2
	20.00	+**0	2	1	0	3
	21.00	+*00	1	2	0	3
	22.00	+*00000	1	5	0	6
HAWKESBURY ISLAND	23.00	+***0000000000000000000000000000000	3	31	0	34
MONEY POINT	24.00	+***000000000	3	9	0	12
	25.00	+***00	3	2	0	5
	26.00	+***00	3	2	0	5
	27.00	+****0	4	1	0	5
	28.00	+****	4	0	0	4
	29.00	+*****	5	0	0	5
	30.00	+****	4	0	0	4
	31.00	+****	4	0	0	4
	32.00	+**	2	0	0	2
	33.00	+**	2	0	0	2
		0 5 10 15 20 25 30 35 40 45 50 55 60 65 70 75	vare	varb	varc	all

Table 062-2 (Cont'd.)

position(km)

	0 5 10 15 20 25 30 35 40 45 50 55 60 65 70 75	vara	varh	varc	all
34.00	+**	2	0	0	2
35.00	+*	1	0	0	1
36.00	+*	1	0	0	1
37.00	+*	1	0	0	1
38.00	+*	1	0	0	1
39.00	+*	1	0	0	1
40.00	+*	1	0	0	1
41.00	+*	1	0	0	1
42.00	+*	1	0	0	1
43.00	+*	1	0	0	1
44.00	+*	1	0	0	1
45.00	+**	2	0	0	2
46.00	+*I	1	0	1	2
47.00	+I	0	0	1	1
HARTLEY BAY 48.00	+I	0	0	1	1
49.00	+I	0	0	1	1
50.00	+	0	0	0	0
51.00	+	0	0	0	0
52.00	+	0	0	0	0
53.00	+	0	0	0	0
54.00	+	0	0	0	0
55.00	+	0	0	0	0
56.00	+II	0	0	2	2
DOUGLAS CHANNEL 57.00	+II	0	0	2	2
58.00	+	0	0	0	0
59.00	+	0	0	0	0
60.00	+	0	0	0	0
61.00	+	0	0	0	0
62.00	+	0	0	0	0
63.00	+	0	0	0	0
64.00	+	0	0	0	0
65.00	+	0	0	0	0
66.00	+	0	0	0	0
67.00	+	0	0	0	0
68.00	+	0	0	0	0
	0 5 10 15 20 25 30 35 40 45 50 55 60 65 70 75	vara	varh	varc	all

Table 062-2 (cont'd.)



vara	varb	varc	all
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	1	1
0	0	1	1
0	0	1	1
0	0	1	1
0	0	0	0
vara	varb	varc	all

Table 062-3. Herring statistical spawn summary for section 062.

Year	Total records	Spawn index	Sum length	Av wid	Av int	Av date	SE date	Wt date	Min day	Max day	Ind day	Ind loc
1937	0	0	0	0	0.0	0.0	0.00	0.0	0	0	0	0
1938	0	0	0	0	0.0	0.0	0.00	0.0	0	0	0	0
1939	0	0	0	0	0.0	0.0	0.00	0.0	0	0	0	0
1940	0	0	0	0	0.0	0.0	0.00	0.0	0	0	0	0
1941	0	0	0	0	0.0	0.0	0.00	0.0	0	0	0	0
1942	0	0	0	0	0.0	0.0	0.00	0.0	0	0	0	0
1943	0	0	0	0	0.0	0.0	0.00	0.0	0	0	0	0
1944	0	0	0	0	0.0	0.0	0.00	0.0	0	0	0	0
1945	0	0	0	0	0.0	0.0	0.00	0.0	0	0	0	0
1946	0	0	0	0	0.0	0.0	0.00	0.0	0	0	0	0
1947	0	0	0	0	0.0	0.0	0.00	0.0	0	0	0	0
1948	0	0	0	0	0.0	0.0	0.00	0.0	0	0	0	0
1949	0	0	0	0	0.0	0.0	0.00	0.0	0	0	0	0
1950	0	0	0	0	0.0	0.0	0.00	0.0	0	0	0	0
1951	0	0	0	0	0.0	0.0	0.00	0.0	0	0	0	0
1952	0	0	0	0	0.0	0.0	0.00	0.0	0	0	0	0
1953	0	0	0	0	0.0	0.0	0.00	0.0	0	0	0	0
1954	0	0	0	0	0.0	0.0	0.00	0.0	0	0	0	0
1955	2	7959	2317	5	4.0	87.0	0.00	87.0	87	87	1	1
1956	0	0	0	0	0.0	0.0	0.00	0.0	0	0	0	0
1957	0	0	0	0	0.0	0.0	0.00	0.0	0	0	0	0
1958	0	0	0	0	0.0	0.0	0.00	0.0	0	0	0	0
1959	0	0	0	0	0.0	0.0	0.00	0.0	0	0	0	0
1960	0	0	0	0	0.0	0.0	0.00	0.0	0	0	0	0
1961	0	0	0	0	0.0	0.0	0.00	0.0	0	0	0	0
1962	0	0	0	0	0.0	0.0	0.00	0.0	0	0	0	0
1963	0	0	0	0	0.0	0.0	0.00	0.0	0	0	0	0
1964	0	0	0	0	0.0	0.0	0.00	0.0	0	0	0	0
1965	0	0	0	0	0.0	0.0	0.00	0.0	0	0	0	0
1966	0	0	0	0	0.0	0.0	0.00	0.0	0	0	0	0
1967	0	0	0	0	0.0	0.0	0.00	0.0	0	0	0	0
1968	0	0	0	0	0.0	0.0	0.00	0.0	0	0	0	0
1969	0	0	0	0	0.0	0.0	0.00	0.0	0	0	0	0
1970	0	0	0	0	0.0	0.0	0.00	0.0	0	0	0	0
1971	0	0	0	0	0.0	0.0	0.00	0.0	0	0	0	0
1972	0	0	0	0	0.0	0.0	0.00	0.0	0	0	0	0
1973	7	24828	7228	9	4.1	149.4	0.81	146.6	146	152	5	2
1974	5	31083	9049	1	3.8	151.2	3.76	150.2	140	160	5	3
1975	0	0	0	0	0.0	0.0	0.00	0.0	0	0	0	0
1976	2	70012	20382	10	4.0	145.5	8.50	138.8	137	154	2	2
1977	0	0	0	0	0.0	0.0	0.00	0.0	0	0	0	0
1978	0	0	0	0	0.0	0.0	0.00	0.0	0	0	0	0
1979	5	70857	20628	4	2.2	145.2	0.73	145.2	144	147	2	1
1980	0	0	0	0	0.0	0.0	0.00	0.0	0	0	0	0
1981	7	8113	2362	7	0.0	153.4	7.57	115.9	108	161	2	2
1982	0	0	0	0	0.0	0.0	0.00	0.0	0	0	0	0
1983	25	33237	9676	4	0.0	152.0	0.00	152.0	152	152	1	1
1984	0	0	0	0	0.0	0.0	0.00	0.0	0	0	0	0
1985	3	13740	4000	3	0.0	135.0	0.00	135.0	135	135	1	1
1986	3	50924	14825	8	0.0	158.0	0.00	158.0	158	158	1	1
All	59	310754	90467	5	3.6	148.2	1.86	144.5	87	161	17	6

Table 062-4. Spawn summary for section 062 from 1937 to 1986.

A. GENERAL:

There are three spawning areas in Douglas Channel:
(i) Hawkesbury Island
(ii) Promise Island and
(iii) Ursula Channel

B. COMPLETENESS OF RECORDS:

Probably all spawning records prior to 1973 are incomplete.

C. SPAWNING CONSISTENCY OVER TIME: FREQUENT

There have been intermittent spawnings since 1973.

D. MAGNITUDE OF SPAWNINGS: VERY SMALL

1. NUMBER OF SPAWN YEARS/50 YEARS	= 9/50 (1937-86)
2. NUMBER OF SPAWN YEARS/DOCUMENTED YEARS	= 8/14 (1973-86)
3. CUMULATIVE SPAWN LENGTH	= 90.5 Km.
4. CUMULATIVE SPAWN AREA	= 31.1 ha.

E. SPAWNING TIME:

1. MEAN UNWEIGHTED DATE (DOY)	= May 28 (148.2)
2. MEAN WEIGHTED DATE (DOY)	= May 25 (144.5)

F. COMMENTS:

This section has a short historical record of spawnings, with one in 1955 and the next from 1973-1983, for a total of 59 spawnings, 25 of which took place in 1983. The mean date of all spawns subsequent to 1983 is very late (May 28). It is listed as a separate stock here with the qualification that the early spawning records could be incomplete. Further monitoring of this area will reveal if this is the case. Alternatively, and more likely, the spawnings in this area represent 'spill-over' spawnings from adjacent locations. The very late spawning date would suggest that these fish could be new recruits, spawning late. A further explanation is that these are part of a very, distinct spawning group that could be centered in Burke Channel (section 084) that has a distinctly late spawning (May 31). If so, then some of the other locations with irregular, intermittent but late spawnings, such as Portland Inlet (section 032) could also be part of this late group of spawners.

G. ROE FISHERIES:

No major roe fisheries are documented.

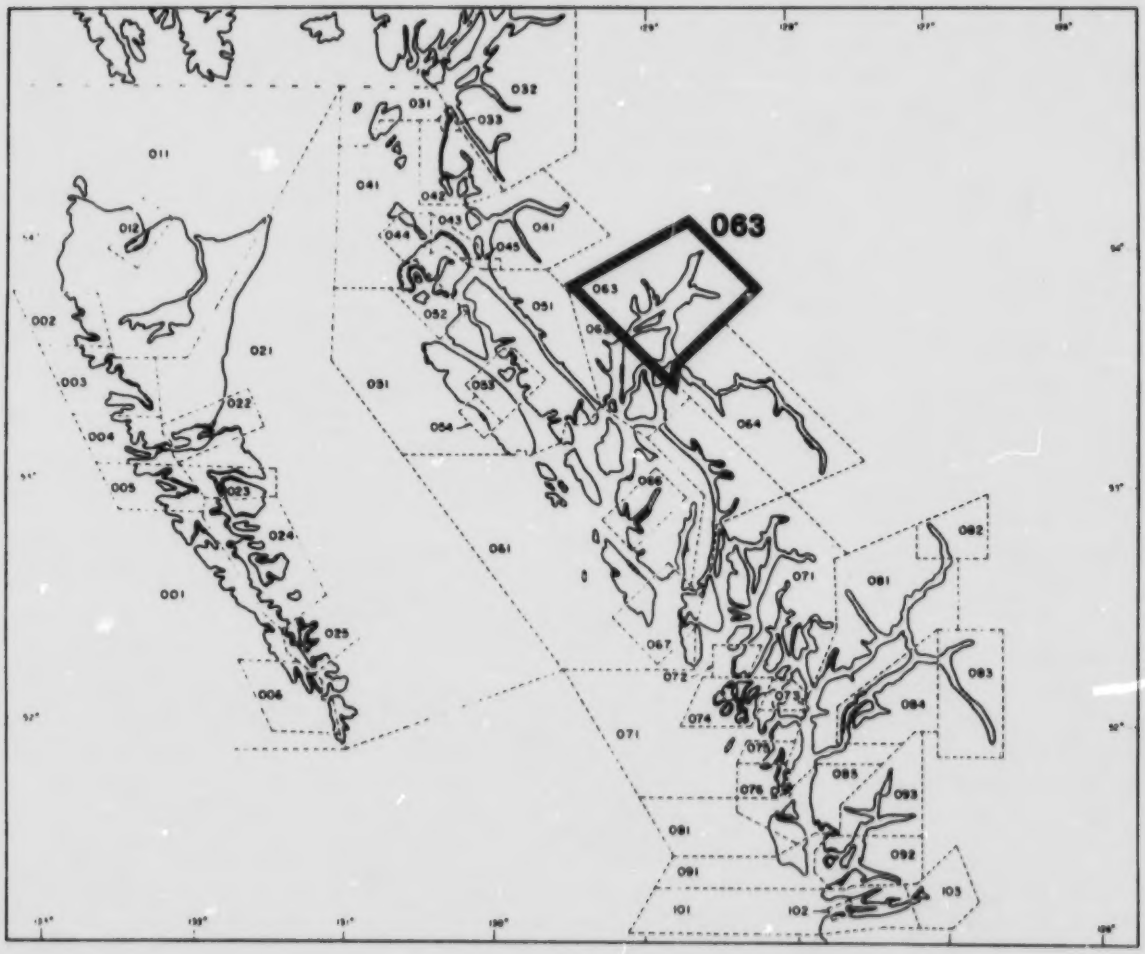


Fig. 063-1. Overview map showing location of section 063, Kitimat Arm.

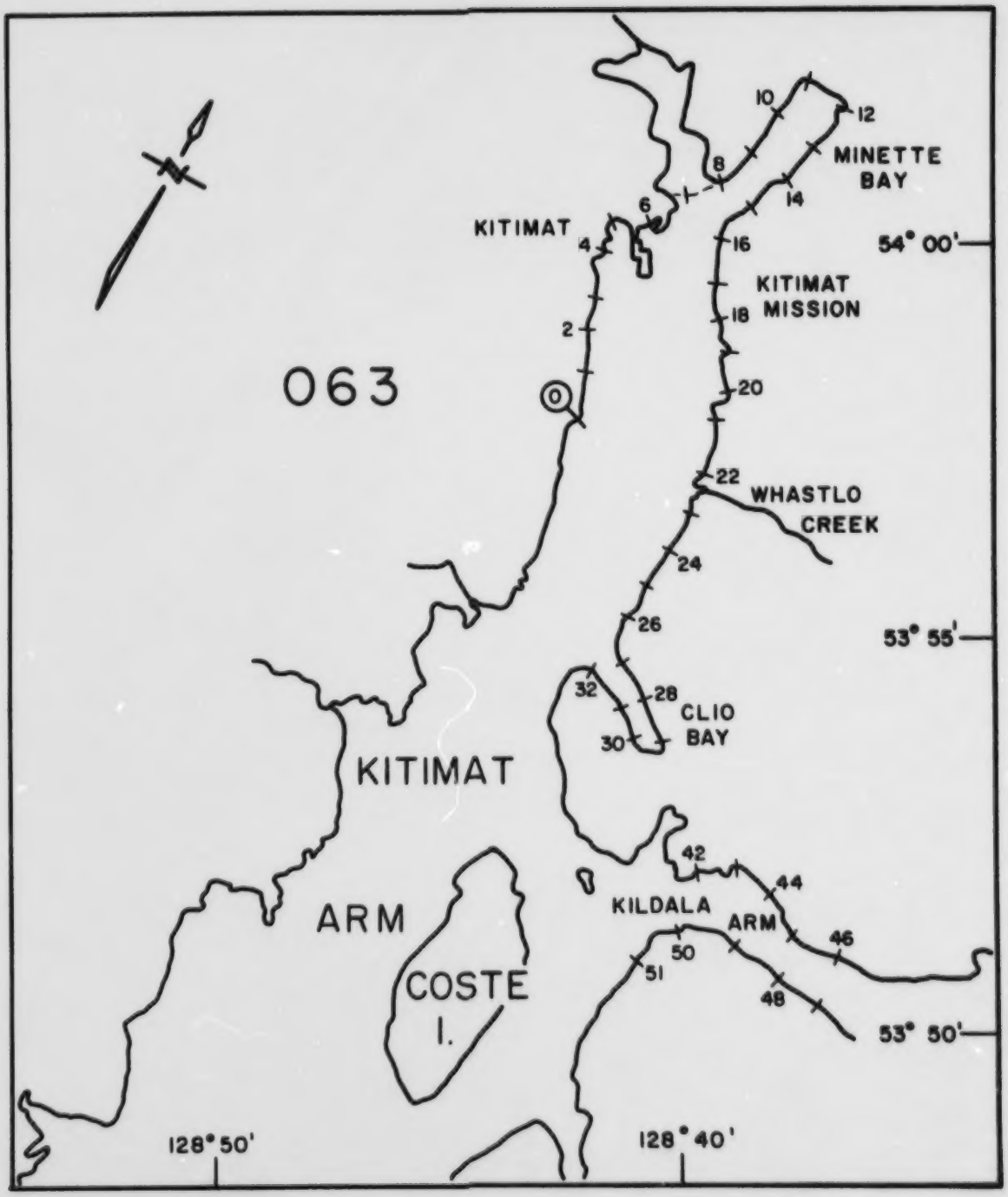


Fig. 063-2. Detailed map of section 063, Kitimat Arm.

Table 063-1. Section 063 - spawn position by year.

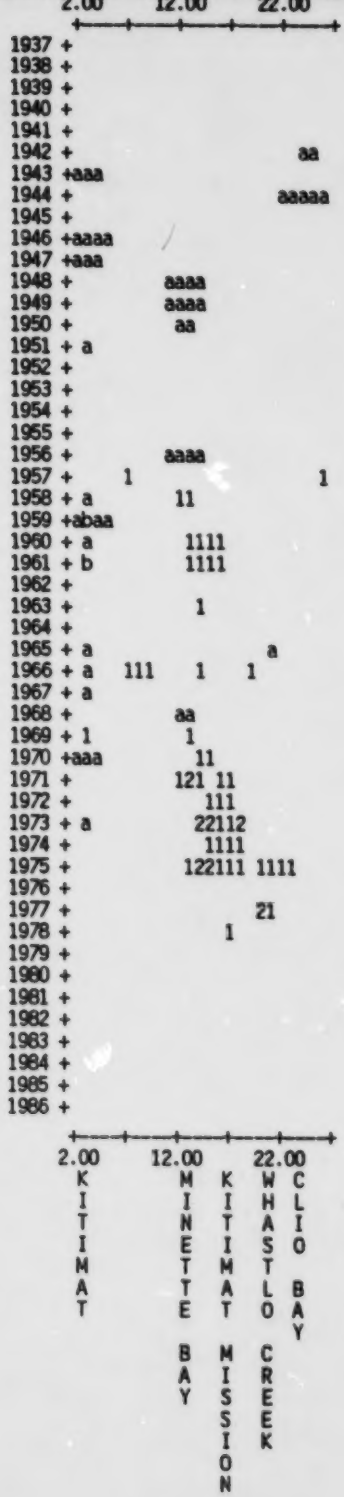


Table 063-2. Section 063 - histogram of cumulative spawn frequency over distance

```
                    position(km)
                          0    5   10   15   20   25   30   35   40   45   50   55   60   65   70   75  vara varb varc  all
                          +----+----+----+----+----+----+----+----+----+----+----+----+----+----+----+----+
                    0.00  +                                                                               0    0    0    0
                    1.00  +00                                                                             0    2    0    2
                    2.00  +00000                                                                          0    5    0    5
KITIMAT             3.00  +*000000000000000                                                               1   15    0   16
                    4.00  +00000                                                                         0    5    0    5
                    5.00  +00                                                                            0    2    0    2
                    6.00  +                                                                               0    0    0    0
                    7.00  +**                                                                            2    0    0    2
                    8.00  +*                                                                             1    0    0    1
                    9.00  +*                                                                             1    0    0    1
                   10.00  +                                                                              0    0    0    0
                   11.00  +000                                                                           0    3    0    3
                   12.00  +**00000                                                                       2    5    0    7
MINETTE BAY        13.00  +*******00000                                                                   7    5    0   12
                   14.00  +**********000                                                                 10    3    0   13
                   15.00  +*********                                                                     9    0    0    9
                   16.00  +*******                                                                       7    0    0    7
KITIMAT MISSION    17.00  +******                                                                        6    0    0    6
                   18.00  +****                                                                          4    0    0    4
                   19.00  +*                                                                            1    0    0    1
                   20.00  +***                                                                           3    0    0    3
WHASTLO CREEK +    21.00  +**0                                                                           2    1    0    3
                   22.00  +*0                                                                            1    1    0    2
                   23.00  +*0                                                                            1    1    0    2
CLIO BAY           24.00  +00                                                                            0    2    0    2
                   25.00  +00                                                                            0    2    0    2
                   26.00  +*0                                                                            1    1    0    2
                   27.00  +                                                                              0    0    0    0
                   28.00  +                                                                              0    0    0    0
                   29.00  +                                                                              0    0    0    0
                   30.00  +                                                                              0    0    0    0
                   31.00  +                                                                              0    0    0    0
                   32.00  +                                                                              0    0    0    0
                   33.00  +                                                                              0    0    0    0
                          +----+----+----+----+----+----+----+----+----+----+----+----+----+----+----+----+
                          0    5   10   15   20   25   30   35   40   45   50   55   60   65   70   75  vara varb varc  all
```

Table 063-2 (cont'd.)

KILDALA ARM

position(km)

	0	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	vara	varb	varc	all
34.00	+																0	0	0	0
35.00	+																0	0	0	0
36.00	+																0	0	0	0
37.00	+																0	0	0	0
38.00	+																0	0	0	0
39.00	+																0	0	0	0
40.00	+																0	0	0	0
41.00	+																0	0	0	0
42.00	+																0	0	0	0
43.00	+II																0	0	2	2
44.00	+IIIII																0	0	5	5
45.00	+IIIII																0	0	5	5
46.00	+II																0	0	2	2
47.00	+																0	0	0	0
	0	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	vara	varb	varc	all

Table 063-3. Herring statistical spawn summary for section 063.

Year	Total records	Spawn index	Sum length	Av wid	Av int	Av date	SE date	Wt date	Min day	Max day	Ind day	Ind loc
1937	0	0	0	0	0.0	0.0	0.00	0.0	0	0	0	0
1938	2	15272	4021	0	6.0	91.0	14.00	99.4	77	105	2	1
1939	2	16799	4423	0	4.0	92.5	12.50	98.2	80	105	2	1
1940	0	0	0	0	0.0	0.0	0.00	0.0	0	0	0	0
1941	0	0	0	0	0.0	0.0	0.00	0.0	0	0	0	0
1942	1	3817	1005	2	5.0	83.0	0.00	83.0	83	83	1	1
1943	1	6248	1645	2	5.0	91.0	0.00	91.0	91	91	1	1
1944	1	15621	4113	2	7.0	88.0	0.00	88.0	88	88	1	1
1945	0	0	0	0	0.0	0.0	0.00	0.0	0	0	0	0
1946	1	13885	3656	4	5.0	91.0	0.00	91.0	91	91	1	1
1947	1	8678	2285	3	3.0	95.0	0.00	95.0	95	95	1	1
1948	1	8678	2285	18	5.0	98.0	0.00	98.0	98	98	1	1
1949	1	7638	2011	20	3.0	73.0	0.00	73.0	73	73	1	1
1950	1	1736	457	21	3.0	80.0	0.00	80.0	80	80	1	1
1951	1	695	183	22	3.0	85.0	0.00	85.0	85	85	1	1
1952	0	0	0	0	0.0	0.0	0.00	0.0	0	0	0	0
1953	0	0	0	0	0.0	0.0	0.00	0.0	0	0	0	0
1954	0	0	0	0	0.0	0.0	0.00	0.0	0	0	0	0
1955	0	0	0	0	0.0	0.0	0.00	0.0	0	0	0	0
1956	2	14926	3930	4	4.0	104.0	18.00	102.7	86	122	2	2
1957	2	3126	823	7	4.0	76.0	1.00	76.1	75	77	2	2
1958	2	5207	1371	4	4.0	75.0	0.00	75.0	75	75	1	2
1959	2	16662	4387	5	4.0	80.5	1.50	81.7	79	82	2	1
1960	2	14060	3702	5	5.0	80.0	0.00	80.0	80	80	1	2
1961	3	16316	4296	4	4.3	78.3	1.67	75.7	75	80	2	2
1962	0	0	0	0	0.0	0.0	0.00	0.0	0	0	0	0
1963	1	346	91	3	3.0	104.0	0.00	104.0	104	104	1	1
1964	0	0	0	0	0.0	0.0	0.00	0.0	0	0	0	0
1965	2	1113	293	12	1.0	81.5	3.50	82.4	78	85	2	2
1966	6	5986	1576	16	4.0	102.2	1.51	101.7	95	106	3	2
1967	1	1041	274	5	3.0	87.0	0.00	87.0	87	87	1	1
1968	1	5207	1371	9	3.0	69.0	0.00	69.0	69	69	1	1
1969	2	1215	320	6	1.0	86.5	13.50	76.9	73	100	2	2
1970	2	10414	2742	9	3.0	66.0	0.00	66.0	66	66	1	2
1971	3	9719	2559	5	4.3	79.0	2.00	78.9	77	83	2	2
1972	2	2951	777	7	1.0	78.0	0.00	78.0	78	78	1	1
1973	5	14474	3811	5	1.0	75.0	0.00	75.0	75	75	1	3
1974	1	9719	2559	5	3.0	78.0	0.00	78.0	78	78	1	1
1975	4	27353	7202	2	2.0	89.0	0.00	89.0	89	89	1	4
1976	0	0	0	0	0.0	0.0	0.00	0.0	0	0	0	0
1977	2	5556	1463	9	1.0	69.0	0.00	69.0	69	69	1	2
1978	1	1041	274	6	1.0	59.0	0.00	59.0	59	59	1	1
1979	0	0	0	0	0.0	0.0	0.00	0.0	0	0	0	0
1980	0	0	0	0	0.0	0.0	0.00	0.0	0	0	0	0
1981	0	0	0	0	0.0	0.0	0.00	0.0	0	0	0	0
1982	0	0	0	0	0.0	0.0	0.00	0.0	0	0	0	0
1983	0	0	0	0	0.0	0.0	0.00	0.0	0	0	0	0
1984	0	0	0	0	0.0	0.0	0.00	0.0	0	0	0	0
1985	0	0	0	0	0.0	0.0	0.00	0.0	0	0	0	0
1986	0	0	0	0	0.0	0.0	0.00	0.0	0	0	0	0
All	59	265499	69905	7	3.2	84.0	1.62	85.5	59	122	25	7

Table 063-4. Spawn summary for section 063 from 1937 to 1986.

A. GENERAL:

There are three main spawning areas at the head of Douglas Channel:
(i) Kitimat
(ii) Minette Bay and
(iii) Kildala Arm

B. COMPLETENESS OF RECORDS:

The 50 year record should be reasonably complete considering proximity to Kitimat.

C. SPAWNING CONSISTENCY OVER TIME: FREQUENT

There have been two main spawning episodes, 1938-51 and 1956-78.

D. MAGNITUDE OF SPAWNINGS: VERY SMALL

1. NUMBER OF SPAWN YEARS/50 YEARS	= 31/50 (1937-86)
2. NUMBER OF SPAWN YEARS/DOCUMENTED YEARS	= 31/50 (1937-86)
3. CUMULATIVE SPAWN LENGTH	= 69.9 Km.
4. CUMULATIVE SPAWN AREA	= 26.6 ha.

E. SPAWNING TIME:

1. MEAN UNWEIGHTED DATE (DOY)	= March 25 (84.0)
2. MEAN WEIGHTED DATE (DOY)	= March 27 (85.5)

F. COMMENTS:

Neither Kitimat (section 063) or Kemano (section 064) have fully continuous spawnings throughout the records. Even when the two locations are pooled the spawnings have a number of large gaps. However, some of this area is remote and it is possible that some spawnings, have been unreported. The mean spawning times of Kitimat (March 25) and Kemano (March 28) are similar and could represent a single stock. The next closest cluster of spawnings, in section 062 is May 28, probably too late to be of the same spawning group.

G. ROE FISHERIES:

No major roe fisheries are documented.

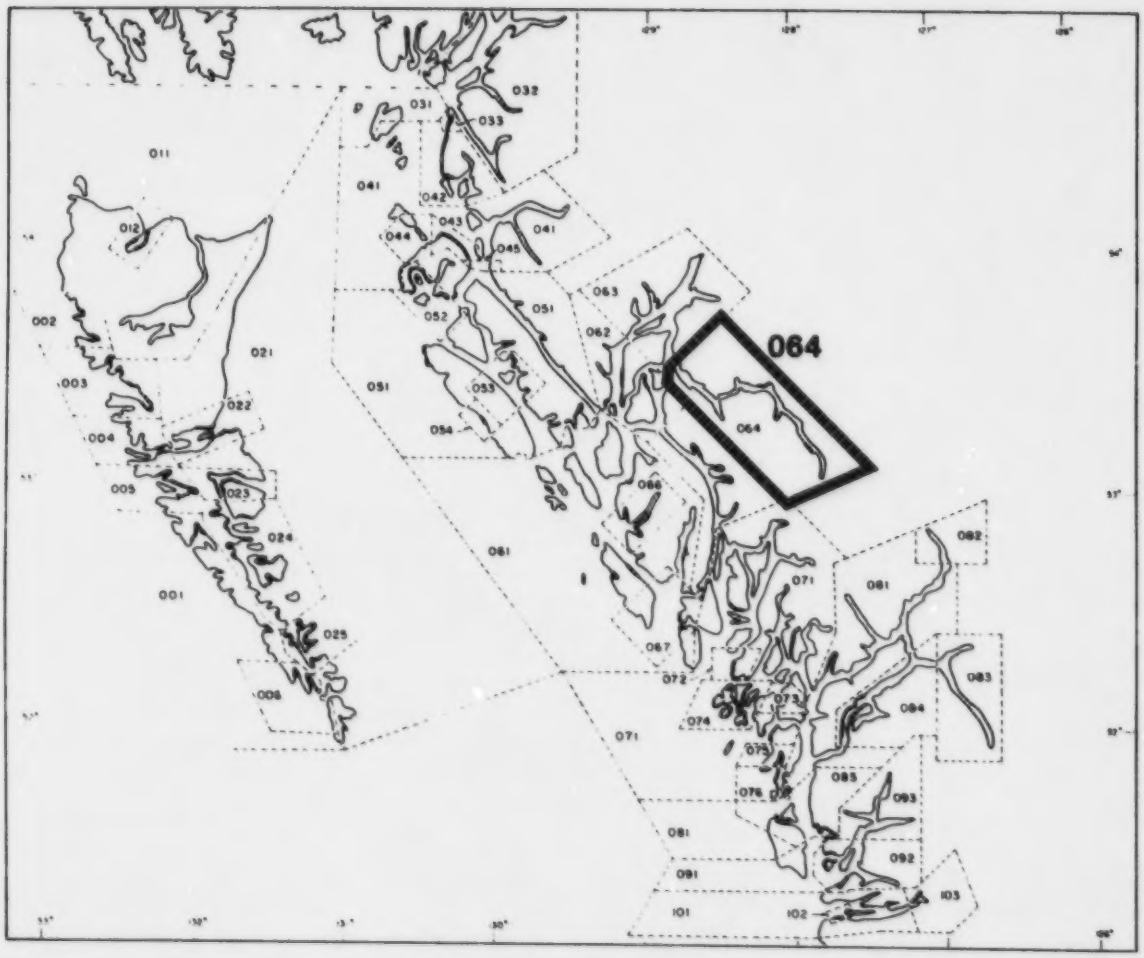


Fig. 064-1. Overview map showing location of section 064, Gardner Canal.

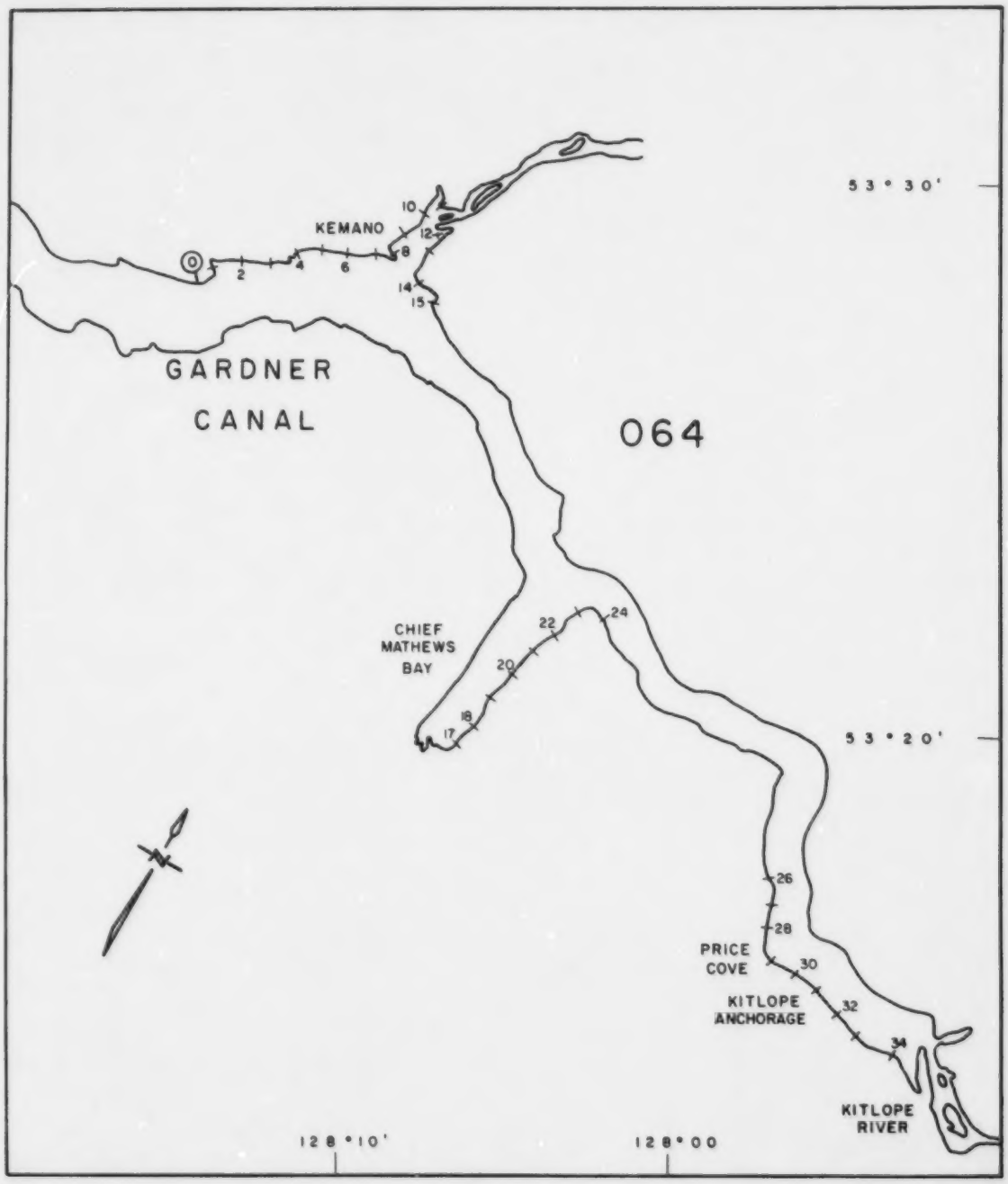


Fig. 064-2. Detailed map of section 064, Gardner Canal.

Table 064-1. Section 064 - spawn position by year.

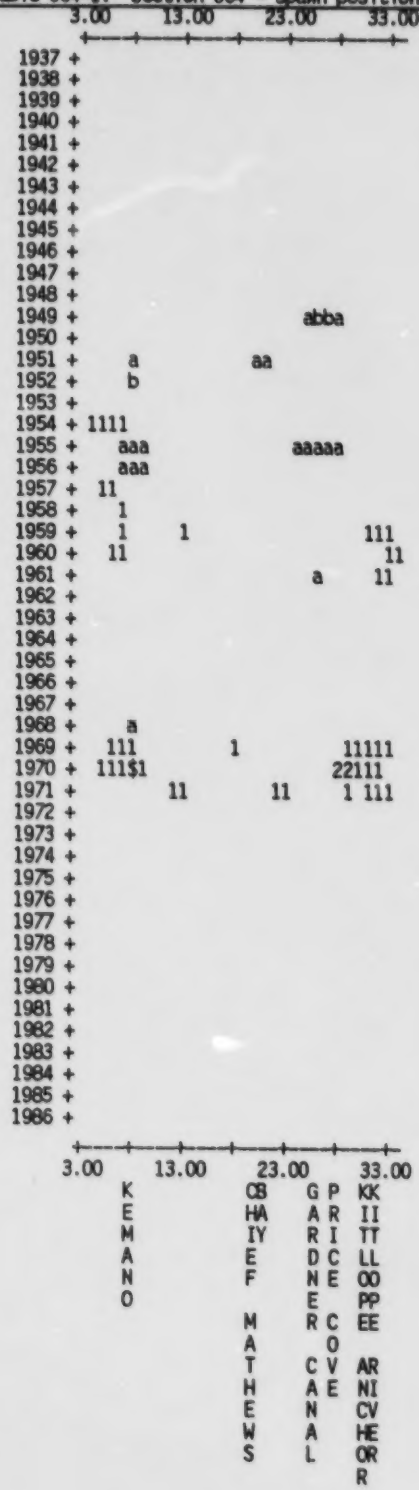


Table 064-2. Section 064 - histogram of cumulative spawn frequency over distance

```
                    position(km)
                          0    5   10   15   20   25   30   35   40   45   50   55   60   65   70   75  vara varb varc all
                          +----+----+----+----+----+----+----+----+----+----+----+----+----+----+----+----+
                    2.00  +                                                                               0    0    0    0
                    3.00  +                                                                               0    0    0    0
                    4.00  +*                                                                              1    0    0    1
                    5.00  +***                                                                            3    0    0    3
                    6.00  +*****                                                                          5    0    0    5
                    7.00  +******00                                                                        6    2    0    8
KEMANO              8.00  +**0000000                                                                      2    7    0    9
                    9.00  +*00                                                                           1    2    0    3
                   10.00  +                                                                               0    0    0    0
                   11.00  +                                                                               0    0    0    0
                   12.00  +*                                                                              1    0    0    1
                   13.00  +**                                                                             2    0    0    2
                   14.00  +                                                                               0    0    0    0
                   15.00  +                                                                               0    0    0    0
                   16.00  +                                                                               0    0    0    0
                   17.00  +                                                                               0    0    0    0
                   18.00  +*                                                                              1    0    0    1
                   19.00  +                                                                               0    0    0    0
CHIEF MATHEWS BAY  20.00  +0                                                                              0    1    0    1
                   21.00  +0                                                                              0    1    0    1
                   22.00  +*                                                                              1    0    0    1
                   23.00  +*                                                                              1    0    0    1
                   24.00  +0                                                                              0    1    0    1
                   25.00  +00                                                                             0    2    0    2
GARDNER CANAL      26.00  +0000                                                                           0    4    0    4
                   27.00  +000                                                                            0    3    0    3
PRICE COVE         28.00  +**00                                                                           2    2    0    4
                   29.00  +****                                                                           4    0    0    4
                   30.00  +**                                                                             2    0    0    2
KITLOPE ANCHORAGE  31.00  +****                                                                           4    0    0    4
KITLOPE RIVER      32.00  +*****                                                                          5    0    0    5
                   33.00  +*****                                                                          5    0    0    5
                   34.00  +*                                                                             1    0    0    1
                   35.00  +*                                                                             1    0    0    1
                   36.00  +                                                                               0    0    0    0
                          +----+----+----+----+----+----+----+----+----+----+----+----+----+----+----+----+
                          0    5   10   15   20   25   30   35   40   45   50   55   60   65   70   75  vara varb varc all
```

Table 064-3. Herring statistical spawn summary for section 064.

Year	Total records	Spawn index	Sum length	Av wid	Av int	Av date	SE date	Wt date	Min day	Max day	Ind day	Ind loc
1937	0	0	0	0	0.0	0.0	0.00	0.0	0	0	0	0
1938	0	0	0	0	0.0	0.0	0.00	0.0	0	0	0	0
1939	0	0	0	0	0.0	0.0	0.00	0.0	0	0	0	0
1940	0	0	0	0	0.0	0.0	0.00	0.0	0	0	0	0
1941	0	0	0	0	0.0	0.0	0.00	0.0	0	0	0	0
1942	0	0	0	0	0.0	0.0	0.00	0.0	0	0	0	0
1943	0	0	0	0	0.0	0.0	0.00	0.0	0	0	0	0
1944	0	0	0	0	0.0	0.0	0.00	0.0	0	0	0	0
1945	0	0	0	0	0.0	0.0	0.00	0.0	0	0	0	0
1946	0	0	0	0	0.0	0.0	0.00	0.0	0	0	0	0
1947	0	0	0	0	0.0	0.0	0.00	0.0	0	0	0	0
1948	0	0	0	0	0.0	0.0	0.00	0.0	0	0	0	0
1949	2	13992	3199	13	2.0	72.5	2.50	71.0	70	75	2	1
1950	0	0	0	0	0.0	0.0	0.00	0.0	0	0	0	0
1951	2	3197	731	17	4.0	83.5	0.50	83.6	83	84	2	2
1952	2	2996	685	12	7.0	81.5	0.50	81.6	81	82	2	1
1953	0	0	0	0	0.0	0.0	0.00	0.0	0	0	0	0
1954	1	15991	3656	7	5.0	77.0	0.00	77.0	77	77	1	1
1955	2	24328	5562	4	2.0	88.0	1.00	88.3	87	89	2	2
1956	1	7996	1828	3	3.0	86.0	0.00	86.0	86	86	1	1
1957	1	3197	731	18	5.0	104.0	0.00	104.0	104	104	1	1
1958	1	201	46	4	3.0	77.0	0.00	77.0	77	77	1	1
1959	3	12790	2924	4	3.7	91.0	0.00	91.0	91	91	1	2
1960	2	10393	2376	4	4.0	84.0	0.00	84.0	84	84	1	2
1961	2	3998	914	5	3.0	80.0	0.00	80.0	80	80	1	1
1962	0	0	0	0	0.0	0.0	0.00	0.0	0	0	0	0
1963	0	0	0	0	0.0	0.0	0.00	0.0	0	0	0	0
1964	0	0	0	0	0.0	0.0	0.00	0.0	0	0	0	0
1965	0	0	0	0	0.0	0.0	0.00	0.0	0	0	0	0
1966	0	0	0	0	0.0	0.0	0.00	0.0	0	0	0	0
1967	0	0	0	0	0.0	0.0	0.00	0.0	0	0	0	0
1968	1	241	55	5	3.0	101.0	0.00	101.0	101	101	1	1
1969	4	22784	5209	3	2.5	87.3	2.66	85.0	81	94	3	4
1970	7	33264	7605	7	2.9	84.1	1.84	80.5	77	87	2	3
1971	4	14390	3290	2	4.0	102.8	2.25	104.3	96	105	2	4
1972	0	0	0	0	0.0	0.0	0.00	0.0	0	0	0	0
1973	0	0	0	0	0.0	0.0	0.00	0.0	0	0	0	0
1974	0	0	0	0	0.0	0.0	0.00	0.0	0	0	0	0
1975	0	0	0	0	0.0	0.0	0.00	0.0	0	0	0	0
1976	0	0	0	0	0.0	0.0	0.00	0.0	0	0	0	0
1977	0	0	0	0	0.0	0.0	0.00	0.0	0	0	0	0
1978	0	0	0	0	0.0	0.0	0.00	0.0	0	0	0	0
1979	0	0	0	0	0.0	0.0	0.00	0.0	0	0	0	0
1980	0	0	0	0	0.0	0.0	0.00	0.0	0	0	0	0
1981	0	0	0	0	0.0	0.0	0.00	0.0	0	0	0	0
1982	0	0	0	0	0.0	0.0	0.00	0.0	0	0	0	0
1983	0	0	0	0	0.0	0.0	0.00	0.0	0	0	0	0
1984	0	0	0	0	0.0	0.0	0.00	0.0	0	0	0	0
1985	0	0	0	0	0.0	0.0	0.00	0.0	0	0	0	0
1986	0	0	0	0	0.0	0.0	0.00	0.0	0	0	0	0
All	35	169759	38811	6	3.4	87.0	1.51	84.9	70	105	17	6

Table 064-4. Spawn summary for section 064 from 1937 to 1986.

A. GENERAL:

There are three main spawning areas in Gardner Canal:
(i) Kemano
(ii) Chief Mathews Bay and
(iii) Price Cove

B. COMPLETENESS OF RECORDS:

Probably all spawning records prior to 1949 are incomplete.

C. SPAWNING CONSISTENCY OVER TIME: INFREQUENT

There have been two main spawning episodes, 1949-61 and 1968-71.

D. MAGNITUDE OF SPAWNINGS: VERY SMALL

1. NUMBER OF SPAWN YEARS/50 YEARS	= 15/50 (1937-86)
2. NUMBER OF SPAWN YEARS/DOCUMENTED YEARS	= 15/38 (1949-86)
3. CUMULATIVE SPAWN LENGTH	= 38.8 Km.
4. CUMULATIVE SPAWN AREA	= 17.0 ha.

E. SPAWNING TIME:

1. MEAN UNWEIGHTED DATE (DOY)	= March 28 (87.0)
2. MEAN WEIGHTED DATE (DOY)	= March 26 (84.9)

F. COMMENTS:

Neither Kitimat (section 063) or Kemano (section 064) have fully continuous spawnings throughout the records. Even when the two locations are pooled the spawnings have a number of large gaps. However, some of this area is remote and it is possible that some spawnings, have been unreported. The mean spawning times of Kitimat (March 25) and Kemano (March 28) are similar and could represent a single stock. The next closest cluster of spawnings, in section 062 is May 28, probably too late to be of the same spawning group.

G. ROE FISHERIES:

No major roe fisheries are documented.

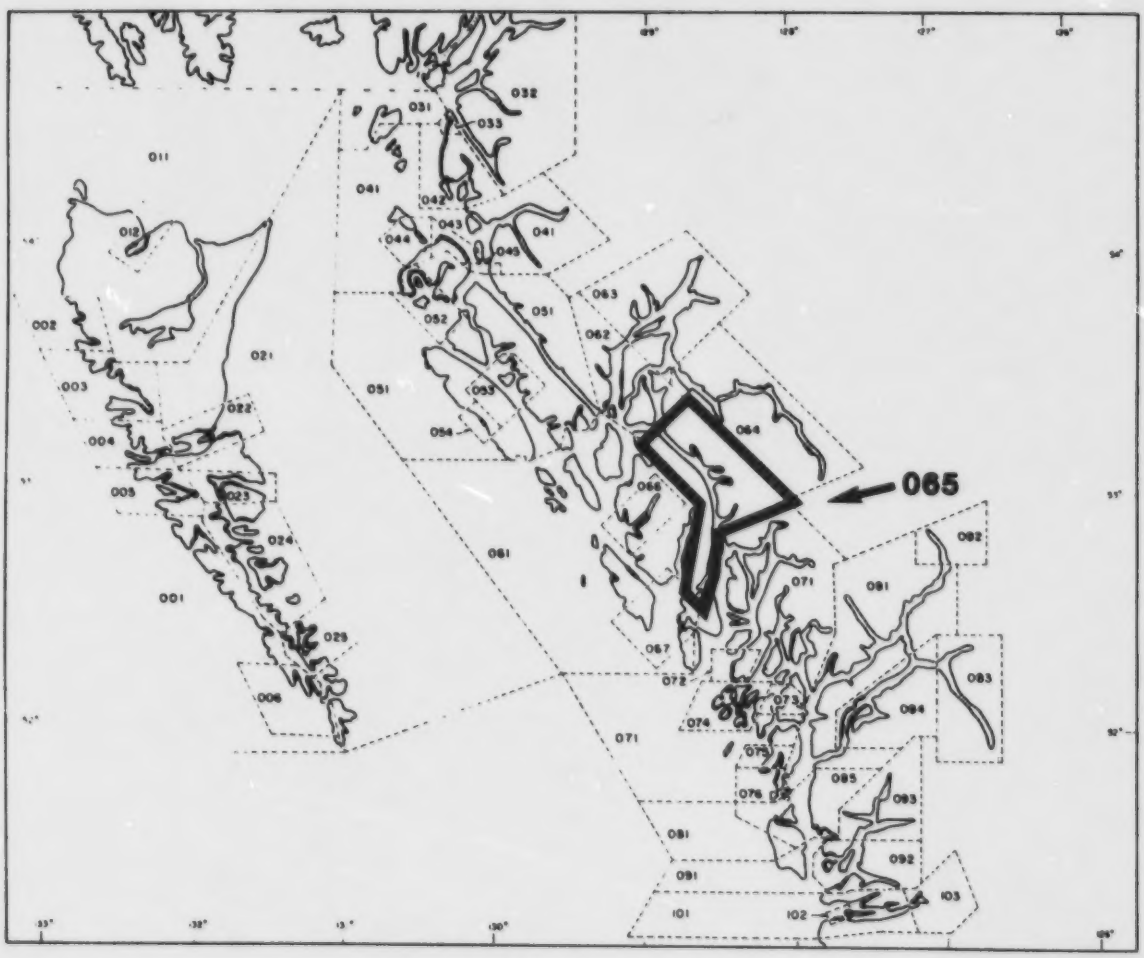


Fig. 065-1. Overview map showing location of section 065, Princess Royal Ch.

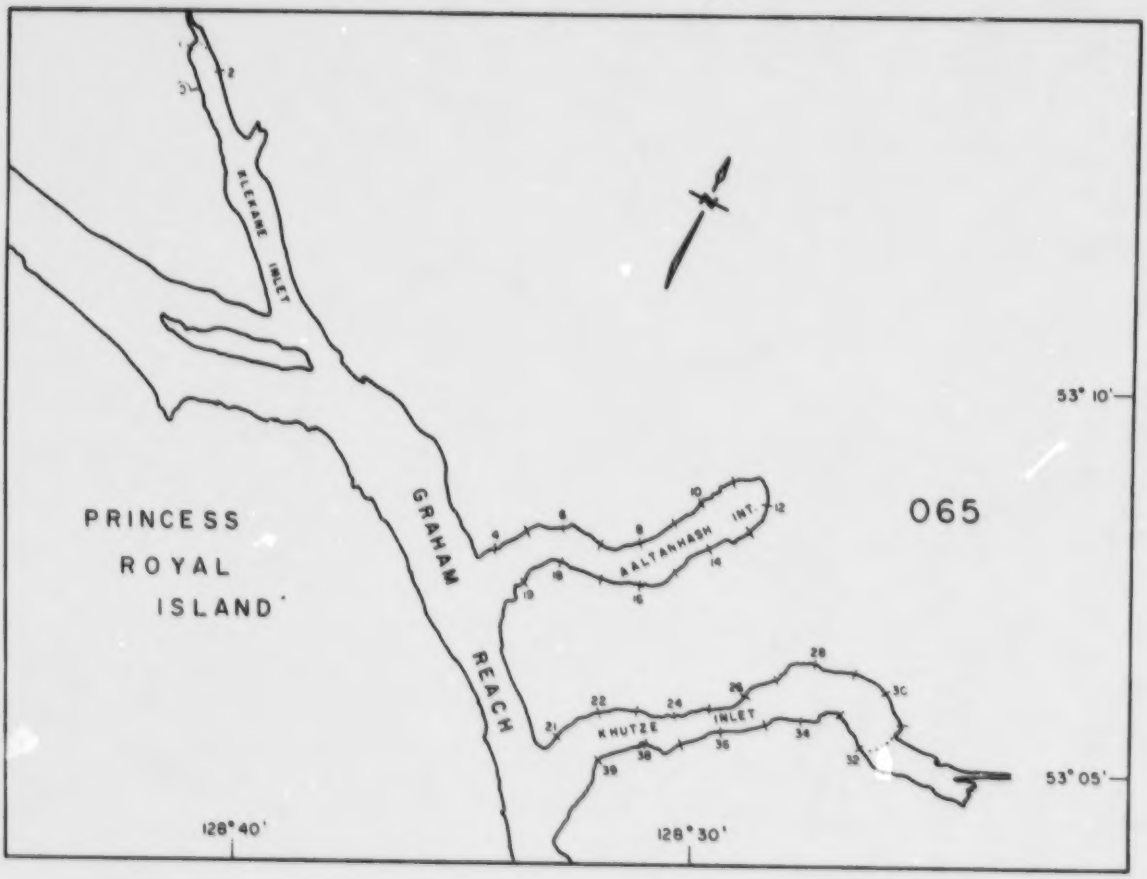


Fig. 065-2. Detailed map of section 065, Princess Royal Ch.

Table 065-1. Section 065 - spawn position by year.

	0.00	10.00	20.00	30.00
1937				
1938				
1939				
1940				
1941				
1942				
1943				
1944				
1945				
1946				
1947				
1948				
1949				
1950				
1951				
1952				
1953				
1954				
1955				
1956				
1957				
1958				
1959				11
1960				
1961				3
1962				
1963				
1964				
1965				
1966				
1967				
1968				
1969				
1970		1		1
1971		111		
1972				
1973				
1974				
1975		1		
1976	1	112		111
1977				1
1978				
1979				
1980				
1981				
1982				
1983				
1984				
1985				
1986				

0.00	10.00	20.00	30.00
KLEKANE INLET	AALTANHASH INL		KHUTZE INLET

Table 065-2. Section 065 - histogram of cumulative spawn frequency over distance

	position(km)	0 5 10 15 20 25 30 35 40 45 50 55 60 65 70 75	vara	varb	varc	all
KLEKANE INLET	0.00	+*	1	0	0	1
	1.00	+	0	0	0	0
	2.00	+	0	0	0	0
	3.00	+	0	0	0	0
	4.00	+	0	0	0	0
	5.00	+	0	0	0	0
	6.00	+	0	0	0	0
	7.00	+	0	0	0	0
	8.00	+**	2	0	0	2
AALTANHASH INLET	9.00	+**	2	0	0	2
	10.00	+****	4	0	0	4
	11.00	+*	1	0	0	1
	12.00	+	0	0	0	0
	13.00	+	0	0	0	0
	14.00	+	0	0	0	0
	15.00	+	0	0	0	0
	16.00	+	0	0	0	0
	17.00	+	0	0	0	0
	18.00	+	0	0	0	0
	19.00	+	0	0	0	0
	20.00	+	0	0	0	0
	21.00	+	0	0	0	0
	22.00	+	0	0	0	0
	23.00	+	0	0	0	0
	24.00	+	0	0	0	0
	25.00	+	0	0	0	0
	26.00	+	0	0	0	0
	27.00	+*	1	0	0	1
	28.00	+*****	5	0	0	5
KHUTZE INLET	29.00	+**	2	0	0	2
	30.00	+*	1	0	0	1
	31.00	+	0	0	0	0
	32.00	+*	1	0	0	1
	33.00	+	0	0	0	0
	34.00	+	0	0	0	0
		0 5 10 15 20 25 30 35 40 45 50 55 60 65 70 75	vara	varb	varc	all

Table 065-3. Herring statistical spawn summary for section 065.

Year	Total records	Spawn index	Sum lenyth	Av wid	Av int	Av date	SE date	Wt date	Min day	Max day	Ind day	Ind loc
1937	0	0	0	0	0.0	0.0	0.00	0.0	0	0	0	0
1938	0	0	0	0	0.0	0.0	0.00	0.0	0	0	0	0
1939	0	0	0	0	0.0	0.0	0.00	0.0	0	0	0	0
1940	0	0	0	0	0.0	0.0	0.00	0.0	0	0	0	0
1941	0	0	0	0	0.0	0.0	0.00	0.0	0	0	0	0
1942	0	0	0	0	0.0	0.0	0.00	0.0	0	0	0	0
1943	0	0	0	0	0.0	0.0	0.00	0.0	0	0	0	0
1944	0	0	0	0	0.0	0.0	0.00	0.0	0	0	0	0
1945	0	0	0	0	0.0	0.0	0.00	0.0	0	0	0	0
1946	0	0	0	0	0.0	0.0	0.00	0.0	0	0	0	0
1947	0	0	0	0	0.0	0.0	0.00	0.0	0	0	0	0
1948	0	0	0	0	0.0	0.0	0.00	0.0	0	0	0	0
1949	0	0	0	0	0.0	0.0	0.00	0.0	0	0	0	0
1950	0	0	0	0	0.0	0.0	0.00	0.0	0	0	0	0
1951	0	0	0	0	0.0	0.0	0.00	0.0	0	0	0	0
1952	0	0	0	0	0.0	0.0	0.00	0.0	0	0	0	0
1953	0	0	0	0	0.0	0.0	0.00	0.0	0	0	0	0
1954	0	0	0	0	0.0	0.0	0.00	0.0	0	0	0	0
1955	0	0	0	0	0.0	0.0	0.00	0.0	0	0	0	0
1956	0	0	0	0	0.0	0.0	0.00	0.0	0	0	0	0
1957	0	0	0	0	0.0	0.0	0.00	0.0	0	0	0	0
1958	0	0	0	0	0.0	0.0	0.00	0.0	0	0	0	0
1959	1	1275	457	5	3.0	110.0	0.00	110.0	110	110	1	1
1960	0	0	0	0	0.0	0.0	0.00	0.0	0	0	0	0
1961	3	1018	365	5	3.0	92.0	0.00	92.0	92	92	1	1
1962	0	0	0	0	0.0	0.0	0.00	0.0	0	0	0	0
1963	0	0	0	0	0.0	0.0	0.00	0.0	0	0	0	0
1964	0	0	0	0	0.0	0.0	0.00	0.0	0	0	0	0
1965	0	0	0	0	0.0	0.0	0.00	0.0	0	0	0	0
1966	0	0	0	0	0.0	0.0	0.00	0.0	0	0	0	0
1967	0	0	0	0	0.0	0.0	0.00	0.0	0	0	0	0
1968	0	0	0	0	0.0	0.0	0.00	0.0	0	0	0	0
1969	0	0	0	0	0.0	0.0	0.00	0.0	0	0	0	0
1970	2	2803	1005	6	4.0	89.0	7.00	85.8	82	96	2	2
1971	2	3185	1142	6	6.0	113.0	0.00	113.0	113	113	1	1
1972	0	0	0	0	0.0	0.0	0.00	0.0	0	0	0	0
1973	0	0	0	0	0.0	0.0	0.00	0.0	0	0	0	0
1974	0	0	0	0	0.0	0.0	0.00	0.0	0	0	0	0
1975	1	1021	366	5	3.0	99.0	0.00	99.0	99	99	1	1
1976	5	13002	4662	2	2.6	108.0	1.22	108.2	106	111	2	3
1977	1	639	229	3	4.0	101.0	0.00	101.0	101	101	1	1
1978	0	0	0	0	0.0	0.0	0.00	0.0	0	0	0	0
1979	0	0	0	0	0.0	0.0	0.00	0.0	0	0	0	0
1980	0	0	0	0	0.0	0.0	0.00	0.0	0	0	0	0
1981	0	0	0	0	0.0	0.0	0.00	0.0	0	0	0	0
1982	0	0	0	0	0.0	0.0	0.00	0.0	0	0	0	0
1983	0	0	0	0	0.0	0.0	0.00	0.0	0	0	0	0
1984	0	0	0	0	0.0	0.0	0.00	0.0	0	0	0	0
1985	0	0	0	0	0.0	0.0	0.00	0.0	0	0	0	0
1986	0	0	0	0	0.0	0.0	0.00	0.0	0	0	0	0
All	15	22942	8226	4	3.5	102.0	2.45	104.9	82	113	9	3

Table 065-4. Spawn summary for section 065 from 1937 to 1986.

A. GENERAL:

There are two main spawning areas in Princess Royal Channel:
(i) Aaltanhash Inlet and
(ii) Khutze Inlet

B. COMPLETENESS OF RECORDS:

The 50 year record should be reasonably complete considering proximity to the former Butedale cannery/fish reduction plant.

C. SPAWNING CONSISTENCY OVER TIME: INFREQUENT

There have been only seven recorded spawnings, 1959, 1960, 1970, 1971, 1975, 1976 and 1977.

D. MAGNITUDE OF SPAWNINGS: VERY SMALL

1. NUMBER OF SPAWN YEARS/50 YEARS	= 7/50 (1937-86)
2. NUMBER OF SPAWN YEARS/DOCUMENTED YEARS	= 7/50 (1937-86)
3. CUMULATIVE SPAWN LENGTH	= 8.2 Km.
4. CUMULATIVE SPAWN AREA	= 2.3 ha.

E. SPAWNING TIME:

1. MEAN UNWEIGHTED DATE (DOY)	= April 12 (102.0)
2. MEAN WEIGHTED DATE (DOY)	= April 15 (104.9)

F. COMMENTS:

Similar spawning dates and geographical proximity suggest that the small and infrequent spawns in this section are associated with those of section 066 on the exposed side of Princess Royal Island.

G. ROE FISHERIES:

No major roe fisheries are documented.

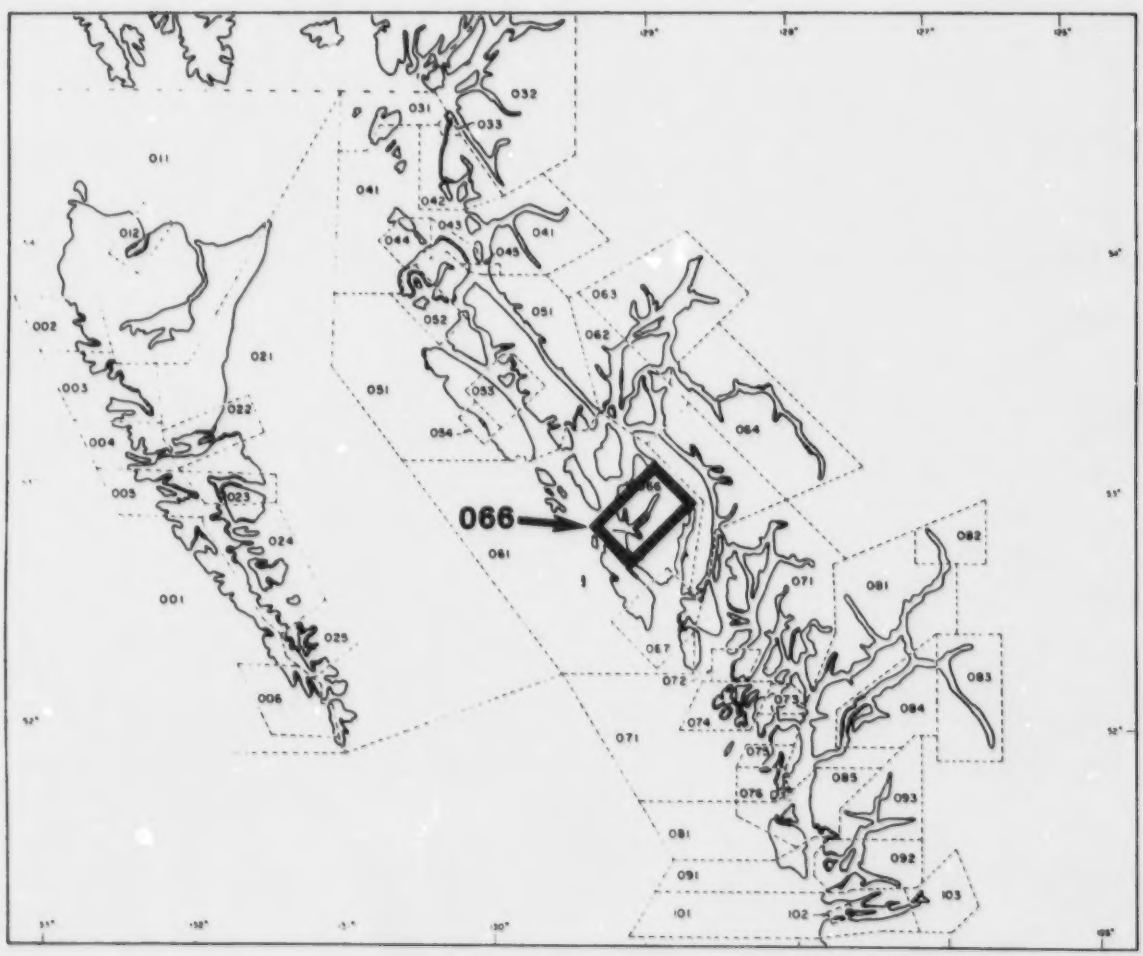


Fig. 066-1. Overview map showing location of section 066, Surf Inlet.

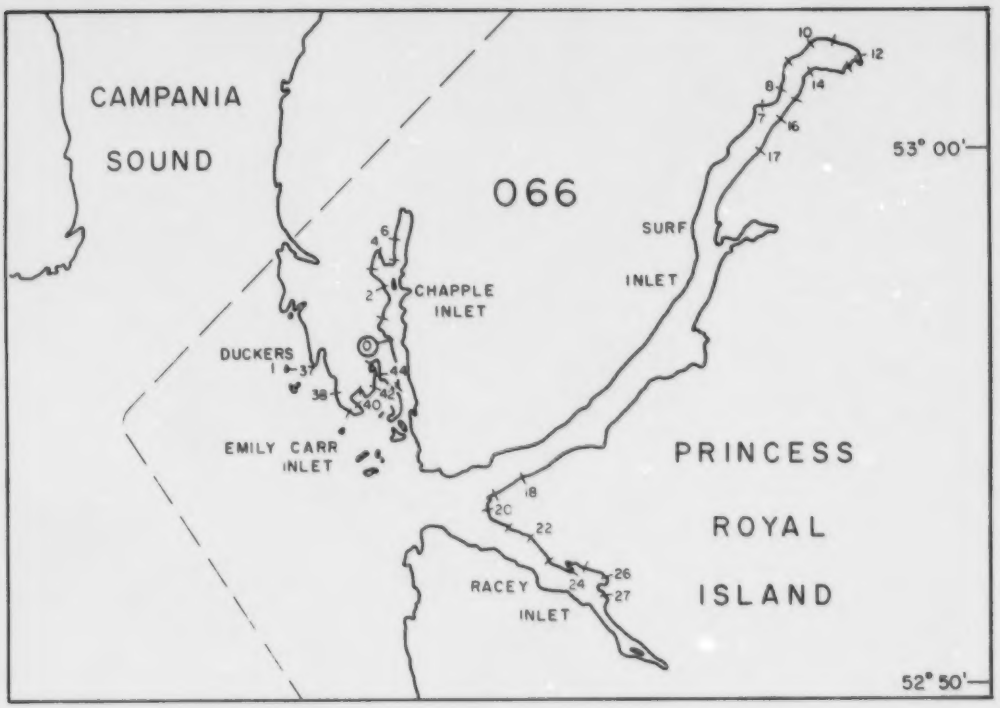


Fig. 066-2. Detailed map of section 066, Surf Inlet.

Table 066-1. Section 066 - spawn posistion by year.

```
          0.00      10.00      20.00
          +---------+---------+---------+
1937      +
1938      +          aaaa
1939      +
1940      +                     aa
1941      +                     aa
1942      +                     aa
1943      + aa                  aa
1944      + a
1945      +                     aa
1946      +                    aaaaaaaa
1947      +          aaaaaaa    aa
1948      +                     aa
1949      +
1950      +
1951      +
1952      +
1953      +
1954      +                          1
1955      +
1956      +                     a
1957      +
1958      +
1959      + 1          1        11
1960      +
1961      +
1962      +
1963      +
1964      +
1965      +
1966      +
1967      +
1968      +
1969      +
1970      +
1971      +
1972      +          aa
1973      +
1974      +
1975      +
1976      +
1977      +
1978      +
1979      +           1
1980      +          aaa
1981      +
1982      +
1983      +
1984      +
1985      +
1986      +
1987      +
1988      +
          +---------+---------+---------+
          0.00      10.00      20.00
            C          S          R
            H          U          A
            A          R          C
            P          F          E
            L                     Y
            E          I
                       N          I
                       L          N
            I          E          L
            N          T          E
            L                     T
```

Table 066-2. Section 066 - histogram of cumulative spawn frequency over distance

	position(km)	vara	varb	varc	all
	0 5 10 15 20 25 30 35 40 45 50 55 60 65 70 75				
	0.00 +				
CHAPPLE INLET	1.00 +*00	0	0	0	0
	2.00 +0	1	2	0	3
	3.00 +	0	1	0	1
	4.00 +	0	0	0	0
	5.00 +	0	0	0	0
	6.00 +	0	0	0	0
	7.00 +	0	0	0	0
	8.00 +0	0	0	0	0
	9.00 +0	0	1	0	1
	10.00 +0000	0	1	0	1
SURF INLET	11.00 +*00000	0	4	0	4
	12.00 +*00000	1	5	0	6
	13.00 +000	1	5	0	6
	14.00 +0	0	3	0	3
	15.00 +	0	1	0	1
	16.00 +	0	0	0	0
	17.00 +	0	0	0	0
	18.00 +	0	0	0	0
	19.00 +	0	0	0	0
	20.00 +*0	0	0	0	0
	21.00 +*0	1	1	0	2
	22.00 +0	1	1	0	2
	23.00 +00000000	0	1	0	1
RACEY INLET	24.00 +000000000	0	8	0	8
	25.00 +0	0	9	0	9
	26.00 +0	0	1	0	1
	27.00 +*0	0	1	0	1
	28.00 +	1	1	0	2
	29.00 +	0	0	0	0
	30.00 +	0	0	0	0
	31.00 +	0	0	0	0
	32.00 +	0	0	0	0
	33.00 +	0	0	0	0
	0 5 10 15 20 25 30 35 40 45 50 55 60 65 70 75	vara	varb	varc	all

Table 066-2 (cont'd.)

position(km)

	0 5 10 15 20 25 30 35 40 45 50 55 60 65 70 75	vara	varb	varc	all
	34.00 +	0	0	0	0
	35.00 +III	0	0	3	3
	36.00 +IIIIIIIII	0	0	9	9
DUCKERS ISLAND	37.00 +IIIIIIIII	0	0	9	9
	38.00 +IIII	0	0	4	4
	39.00 +I	0	0	1	1
	40.00 +II	0	0	2	2
EMILY CARR INLET	41.00 +IIIIII	0	0	6	6
	42.00 +II	0	0	2	2
	43.00 +I	0	0	1	1
	44.00 +I	0	0	1	1
	45.00 +	0	0	0	0
	0 5 10 15 20 25 30 35 40 45 50 55 60 65 70 75	vara	varb	varc	all

Table 066-3. Herring statistical spawn summary for section 066.

Year	Total records	Spawn index	Sum length	Av wid	Av int	Av date	SE date	Wt date	Min day	Max day	Ind day	Ind loc
1937	0	0	0	0	0.0	0.0	0.00	0.0	0	0	0	0
1938	1	73328	3217	0	7.0	100.0	0.00	100.0	100	100	1	1
1939	1	0	0	0	0.0	100.0	0.00	0.0	100	100	1	1
1940	1	18326	804	0	5.0	93.0	0.00	93.0	93	93	1	1
1941	1	18326	804	0	5.0	89.0	0.00	89.0	89	89	1	1
1942	1	10417	457	23	5.0	95.0	0.00	95.0	95	95	1	1
1943	2	42716	1874	15	5.0	93.5	0.50	93.7	93	94	2	2
1944	2	95849	4205	19	7.0	92.5	0.50	92.1	92	93	2	2
1945	2	102094	4479	8	7.0	92.0	3.00	90.1	89	95	2	2
1946	3	324997	14258	11	7.0	93.7	1.67	94.4	92	97	2	3
1947	4	229171	10054	8	6.5	98.3	2.14	99.1	92	101	3	4
1948	3	95826	4204	14	6.3	95.3	4.18	90.8	87	100	3	3
1949	1	17187	754	27	7.0	96.0	0.00	96.0	96	96	1	1
1950	2	41143	1805	34	7.0	96.5	0.50	96.6	96	97	2	2
1951	4	47389	2079	10	7.5	97.5	0.29	97.5	97	98	2	2
1952	0	0	0	0	0.0	0.0	0.00	0.0	0	0	0	0
1953	0	0	0	0	0.0	0.0	0.00	0.0	0	0	0	0
1954	1	4171	183	5	5.0	94.0	0.00	94.0	94	94	1	1
1955	0	0	0	0	0.0	0.0	0.00	0.0	0	0	0	0
1956	1	1049	46	3	1.0	96.0	0.00	96.0	96	96	1	1
1957	0	0	0	0	0.0	0.0	0.00	0.0	0	0	0	0
1958	0	0	0	0	0.0	0.0	0.00	0.0	0	0	0	0
1959	3	20811	913	47	3.7	97.3	3.28	100.6	91	102	3	3
1960	0	0	0	0	0.0	0.0	0.00	0.0	0	0	0	0
1961	0	0	0	0	0.0	0.0	0.00	0.0	0	0	0	0
1962	0	0	0	0	0.0	0.0	0.00	0.0	0	0	0	0
1963	0	0	0	0	0.0	0.0	0.00	0.0	0	0	0	0
1964	0	0	0	0	0.0	0.0	0.00	0.0	0	0	0	0
1965	0	0	0	0	0.0	0.0	0.00	0.0	0	0	0	0
1966	0	0	0	0	0.0	0.0	0.00	0.0	0	0	0	0
1967	0	0	0	0	0.0	0.0	0.00	0.0	0	0	0	0
1968	0	0	0	0	0.0	0.0	0.00	0.0	0	0	0	0
1969	0	0	0	0	0.0	0.0	0.00	0.0	0	0	0	0
1970	0	0	0	0	0.0	0.0	0.00	0.0	0	0	0	0
1971	0	0	0	0	0.0	0.0	0.00	0.0	0	0	0	0
1972	1	31251	1371	5	5.0	161.0	0.00	161.0	161	161	1	1
1973	0	0	0	0	0.0	0.0	0.00	0.0	0	0	0	0
1974	0	0	0	0	0.0	0.0	0.00	0.0	0	0	0	0
1975	0	0	0	0	0.0	0.0	0.00	0.0	0	0	0	0
1976	0	0	0	0	0.0	0.0	0.00	0.0	0	0	0	0
1977	0	0	0	0	0.0	0.0	0.00	0.0	0	0	0	0
1978	0	0	0	0	0.0	0.0	0.00	0.0	0	0	0	0
1979	1	10417	457	5	4.0	124.0	0.00	124.0	124	124	1	1
1980	1	52084	2285	5	2.0	129.0	0.00	129.0	129	129	1	1
1981	0	0	0	0	0.0	0.0	0.00	0.0	0	0	0	0
1982	0	0	0	0	0.0	0.0	0.00	0.0	0	0	0	0
1983	0	0	0	0	0.0	0.0	0.00	0.0	0	0	0	0
1984	0	0	0	0	0.0	0.0	0.00	0.0	0	0	0	0
1985	0	0	0	0	0.0	0.0	0.00	0.0	0	0	0	0
1986	0	0	0	0	0.0	0.0	0.00	0.0	0	0	0	0
All	36	1236552	54249	16	5.9	99.1	2.22	98.4	87	161	17	5

Table 066-4. Spawn summary for section 066 from 1937 to 1986.

A. GENERAL:

There are three main spawning areas in this section:
(i) Racey Inlet
(ii) Surf Inlet and
(iii) Emily Carr Inlet-Duckers Island

B. COMPLETENESS OF RECORDS:

Spawning records are probably complete only from 1937 to 1951 which coincides closely with the operation of the Butedale cannery/fish reduction plant.

C. SPAWNING CONSISTENCY OVER TIME: CONSTANT

There have been constant spawnings only during the years, 1940-51 with intermittent spawnings in other years.

D. MAGNITUDE OF SPAWNINGS: SMALL

1. NUMBER OF SPAWN YEARS/50 YEARS	= 19/50 (1937-86)
2. NUMBER OF SPAWN YEARS/DOCUMENTED YEARS	= 13/15 (1937-51)
3. CUMULATIVE SPAWN LENGTH	= 54.3 Km.
4. CUMULATIVE SPAWN AREA	= 123.7 ha.

E. SPAWNING TIME:

1. MEAN UNWEIGHTED DATE (DOY)	= April 9 (99.1)
2. MEAN WEIGHTED DATE (DOY)	= April 8 (98.4)

F. COMMENTS:

Surf Inlet has records of 38 spawns which were consistent between 1938 and 1951, with a mean spawning time of approximately April 5. Only six spawns have been recorded since that time and the last three (in 1972, 1979 and 1980) have been very late (May 4-June 10). Therefore, it seems that the most recent spawnings are, perhaps, different than those of the 1940's. Surf Inlet and surrounding areas probably do not represent a distinct stock at the present time. It is possible, however, that there might have once been a distinct but small stock that has since gone extinct. More spawns in this area could represent unsucessful colonization attempts from immigrating spawners from surrounding stocks.

G. ROE FISHERIES:

No major roe fisheries are documented.

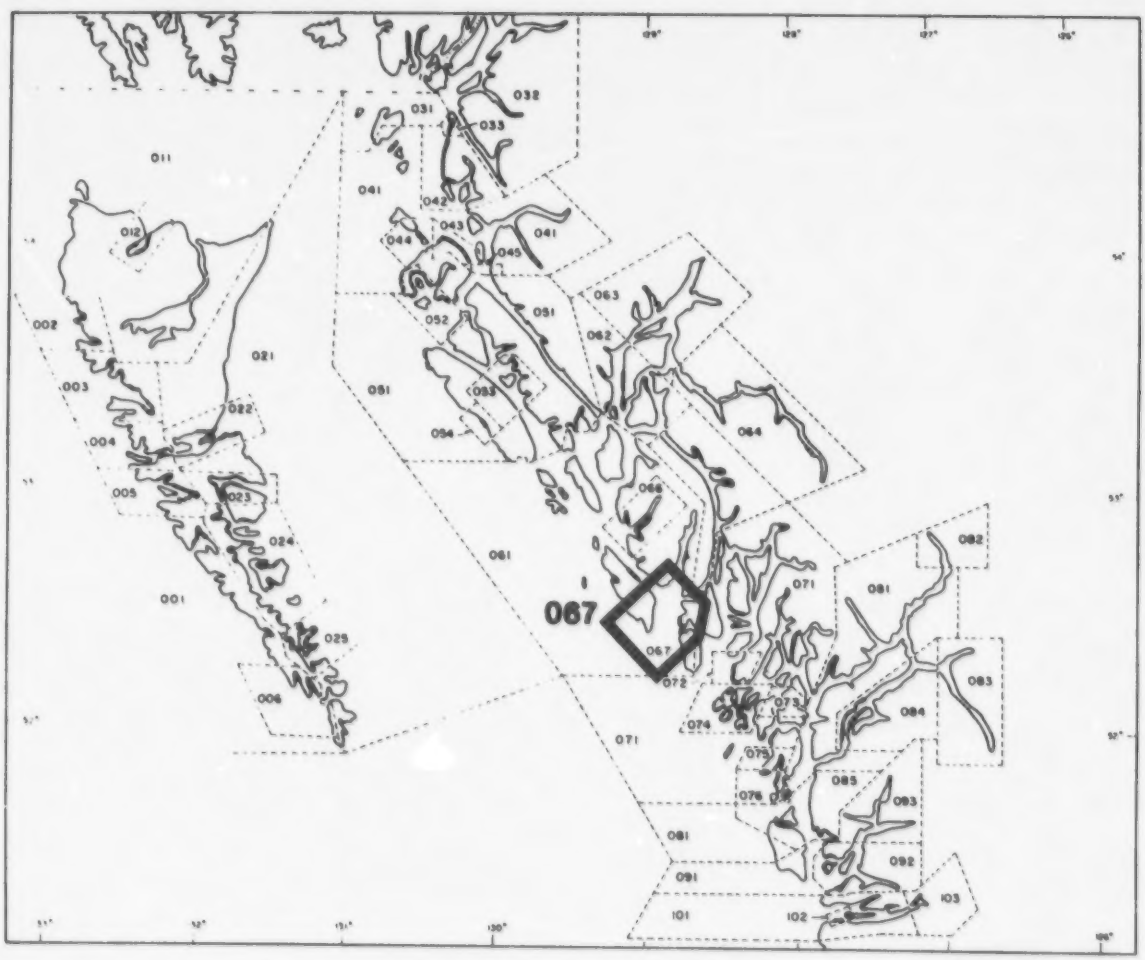


Fig. 067-1. Overview map showing location of section 067, Kitasu Bay.

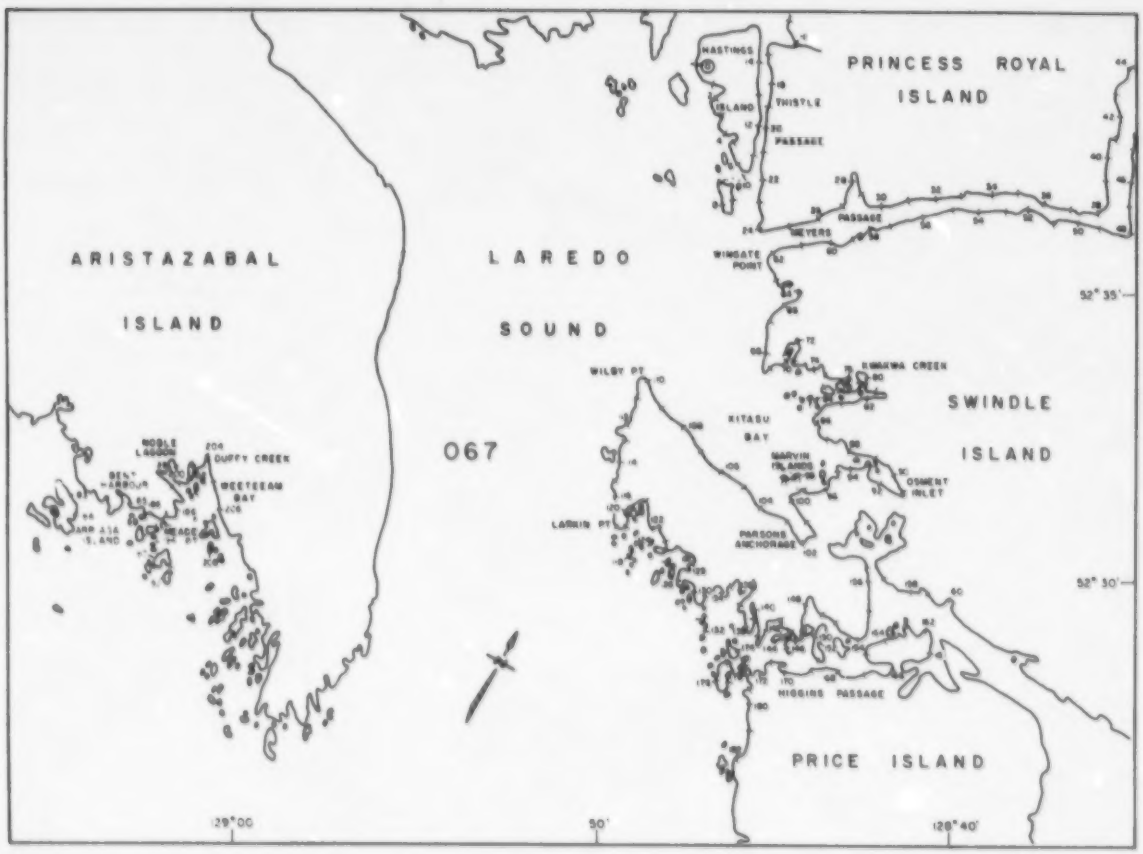


Fig. 067-2. Detailed map of section 067, Kitasu Bay.

Table 067-1. Section 067 - spawn position by year.

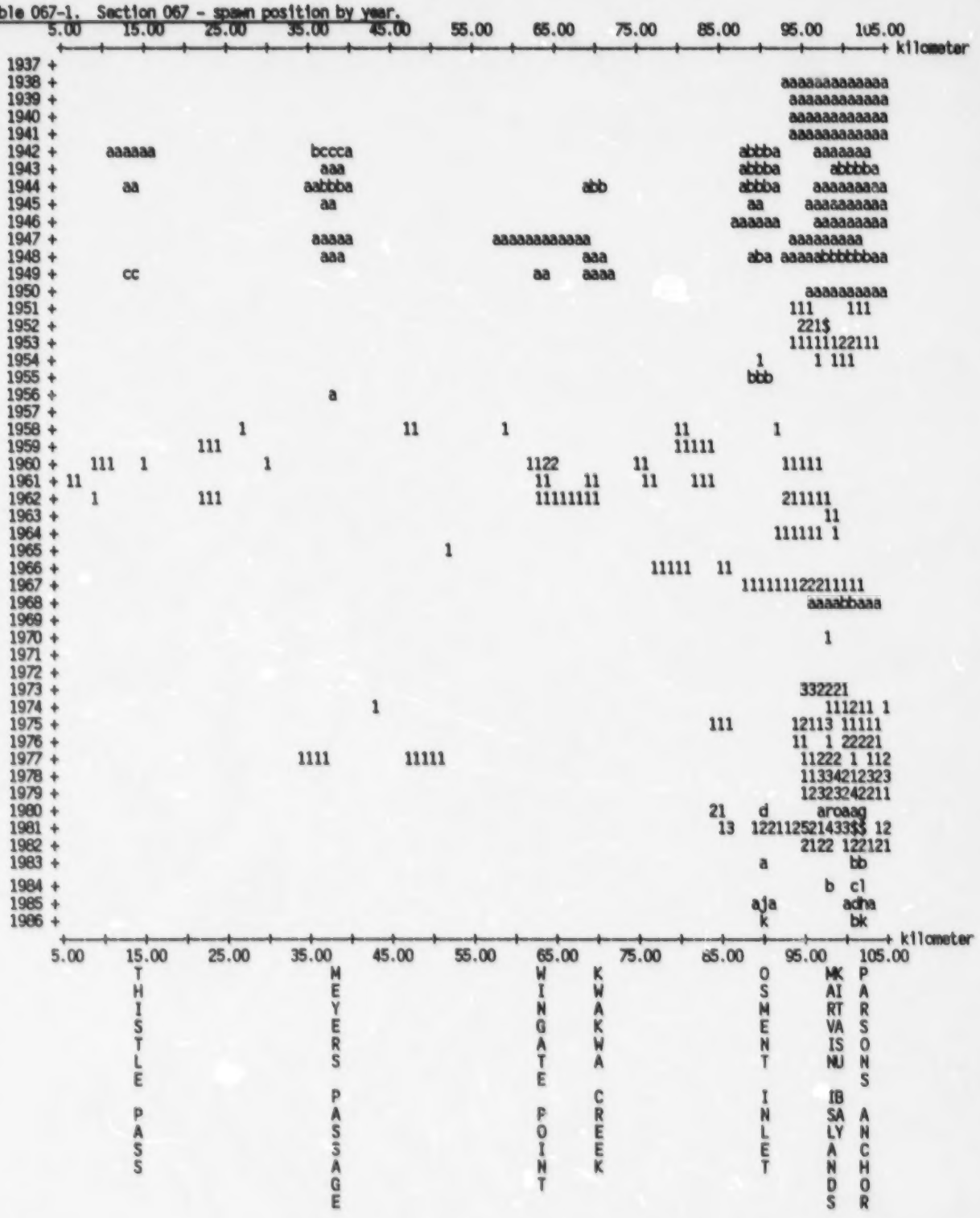


Table 067-1 (cont'd). Section 067 (cont'd) - spawn position by year.

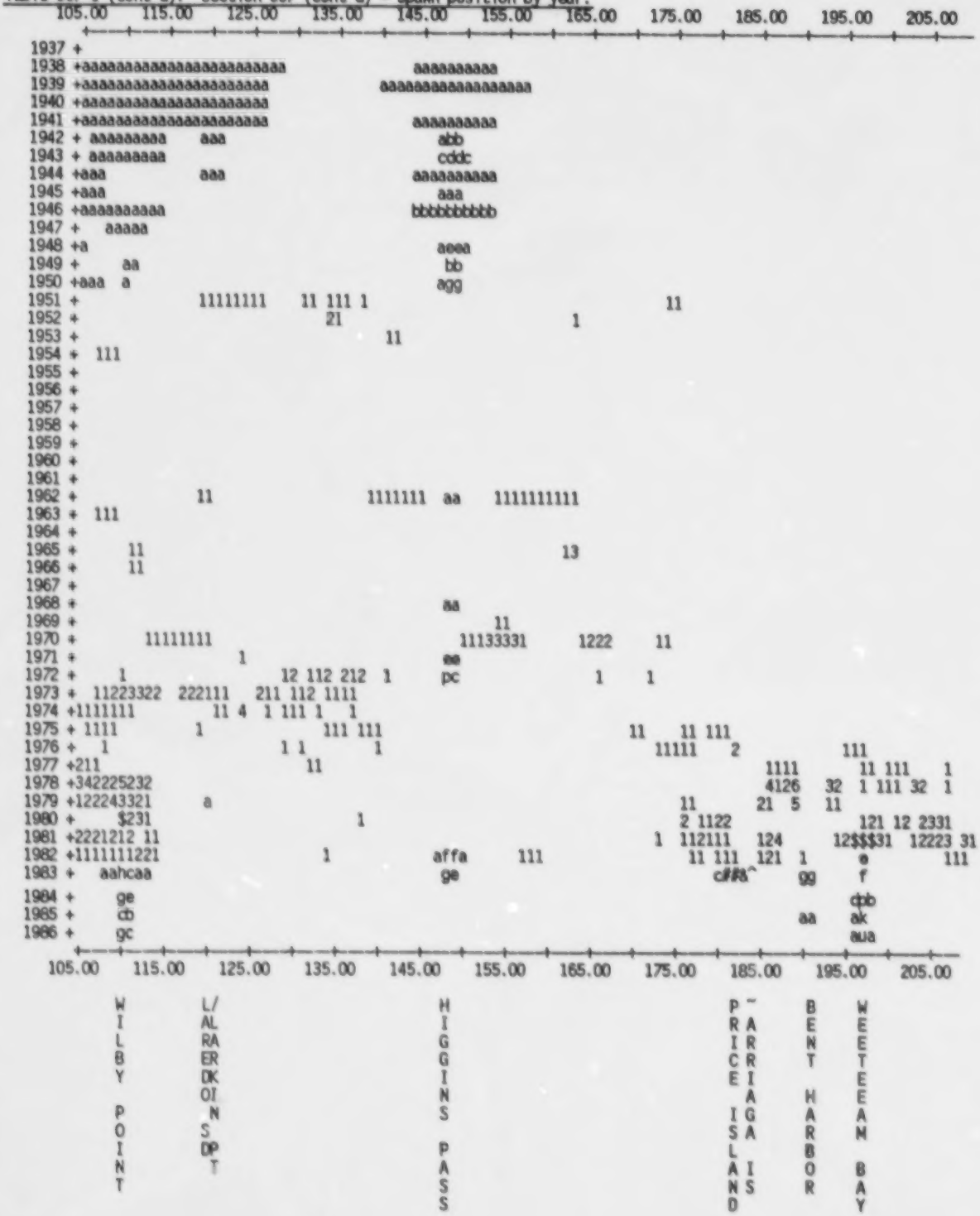


Table 067-2. Section 067 - histogram of cumulative spawn frequency over distance

```
                    position(km)
                          0    5   10   15   20   25   30   35   40   45   50   55   60   65   70   75  vara varh varc  all
                          +----+----+----+----+----+----+----+----+----+----+----+----+----+----+----+----+
                    4.00  +                                                                              0    0    0    0
                    5.00  +                                                                              0    0    0    0
                    6.00  +*                                                                             1    0    0    1
                    7.00  +*                                                                             1    0    0    1
                    8.00  +                                                                              0    0    0    0
                    9.00  +**                                                                            2    0    0    2
                   10.00  +*                                                                             1    0    0    1
                   11.00  +*0                                                                            1    1    0    2
                   12.00  +0                                                                             0    1    0    1
                   13.00  +00000                                                                         0    5    0    5
THISTLE PASSAGE    14.00  +00000                                                                         0    5    0    5
                   15.00  +*0                                                                            1    1    0    2
                   16.00  +0                                                                             0    1    0    1
                   17.00  +                                                                              0    0    0    0
                   18.00  +                                                                              0    0    0    0
                   19.00  +                                                                              0    0    0    0
                   20.00  +                                                                              0    0    0    0
                   21.00  +                                                                              0    0    0    0
                   22.00  +**                                                                            2    0    0    2
                   23.00  +**                                                                            2    0    0    2
                   24.00  +**                                                                            2    0    0    2
                   25.00  +                                                                              0    0    0    0
                   26.00  +                                                                              0    0    0    0
                   27.00  +*                                                                             1    0    0    1
                   28.00  +                                                                              0    0    0    0
                   29.00  +                                                                              0    0    0    0
                   30.00  +*                                                                             1    0    0    1
                   31.00  +                                                                              0    0    0    0
                   32.00  +                                                                              0    0    0    0
                   33.00  +                                                                              0    0    0    0
                   34.00  +*                                                                             1    0    0    1
                   35.00  +*0                                                                            1    1    0    2
                   36.00  +*0000                                                                         1    4    0    5
                   37.00  +*000000000                                                                    1    9    0   10
                          +----+----+----+----+----+----+----+----+----+----+----+----+----+----+----+----+
                          0    5   10   15   20   25   30   35   40   45   50   55   60   65   70   75  vara varh varc  all
```

Table 067-2 (cont'd.)

position(km)

		0 5 10 15 20 25 30 35 40 45 50 55 60 65 70 75	vara	varb	varc	all
MEYERS PASSAGE	38.00	+0000000000	0	10	0	10
	39.00	+00000000	0	8	0	8
	40.00	+000	0	3	0	3
	41.00	+	0	0	0	0
	42.00	+	0	0	0	0
	43.00	+*	1	0	0	1
	44.00	+	0	0	0	0
	45.00	+	0	0	0	0
	46.00	+	0	0	0	0
	47.00	+**	2	0	0	2
	48.00	+**	2	0	0	2
	49.00	+*	1	0	0	1
	50.00	+*	1	0	0	1
	51.00	+*	1	0	0	1
	52.00	+*	1	0	0	1
	53.00	+	0	0	0	0
	54.00	+	0	0	0	0
	55.00	+	0	0	0	0
	56.00	+	0	0	0	0
	57.00	+	0	0	0	0
	58.00	+0	0	1	0	1
	59.00	+*0	1	1	0	2
	60.00	+0	0	1	0	1
	61.00	+0	0	1	0	1
	62.00	+*0	1	1	0	2
WINGATE POINT	63.00	+***00	3	2	0	5
	64.00	+****00	4	2	0	6
	65.00	+***0	3	1	0	4
	66.00	+*0	1	1	0	2
	67.00	+*0	1	1	0	2
	68.00	+*0	1	1	0	2
	69.00	+**0000	2	4	0	6
KWAKWA CREEK	70.00	+**0000	2	4	0	6
	71.00	+0000	0	4	0	4
	72.00	+0	0	1	0	1
		0 5 10 15 20 25 30 35 40 45 50 55 60 65 70 75	vara	varb	varc	all

Table 067-2 (cont'd.)

position(km)

		0 5 10 15 20 25 30 35 40 45 50 55 60 65 70 75	vara	varb	varc	all
	73.00	+	0	0	0	0
	74.00	+	0	0	0	0
	75.00	+*	1	0	0	1
	76.00	+**	2	0	0	2
	77.00	+**	2	0	0	2
	78.00	+*	1	0	0	1
	79.00	+*	1	0	0	1
	80.00	+***	3	0	0	3
	81.00	+***	3	0	0	3
	82.00	+**	2	0	0	2
	83.00	+**	2	0	0	2
	84.00	+*****	5	0	0	5
	85.00	+****	4	0	0	4
	86.00	+*****	5	0	0	5
	87.00	+0	0	1	0	1
	88.00	+*0000	1	4	0	5
	89.00	+**000000000000	2	12	0	14
CEMENT INLET	90.00	+****00000000000000000000000000000000000000	4	38	0	42
	91.00	+***0000000000	3	11	0	14
	92.00	+****0000	4	4	0	8
	93.00	+******000	6	3	0	9
	94.00	+**********0000000	10	7	0	17
	95.00	+*************************0000000	25	7	0	32
	96.00	+**********************0000000000	20	10	0	30
	97.00	+************************00000000000000	22	14	0	36
MARVIN ISLANDS	98.00	+*************************000000000000000000000000000000000000	26	35	0	61
KITASU BAY	99.00	+**********************0000000000000000000000000000	20	30	0	50
	100.00	+*****************00000000000000000	17	19	0	36
	101.00	+**********************000000000000000000000000000	19	30	0	49
PARSONS ANCHORAGE	102.00	+**************0000000000000000000000000000000000000000000000000000000000	14	59	0	73
	103.00	+**************00000000000000000	13	16	0	29
	104.00	+**********0000000000000	10	12	0	22
	105.00	+**********0000000000	10	10	0	2
	106.00	+************00000000000	12	11	0	23
	107.00	+**************00000000000	13	11	0	24
		0 5 10 15 20 25 30 35 40 45 50 55 60 65 70 75	vara	varb	varc	all

Table 067-2 (cont'd.)

position(km)

```
                +----+----+----+----+----+----+----+----+----+----+----+----+----+----+----+
                0    5   10   15   20   25   30   35   40   45   50   55   60   65   70   75
108.00 +**********0000000000
109.00 +**************0000000000
WILBY POINT
110.00 +****************00000000000000000000000000000000000000000000000000
111.00 +****************0000000000000000000000000
112.00 +**************0000000000
113.00 +**********000000000
114.00 +*****00000000
115.00 +*00000
116.00 +*00000
117.00 +***00000
118.00 +***00000
119.00 +******0000000
LAREDO SOUND/LARKIN POINT 120.00 +****00000000
121.00 +***0000000
122.00 +***00000
123.00 +*00000
124.00 +******00000
125.00 +*00000
126.00 +***00000
127.00 +**00
128.00 +*00
129.00 +***
130.00 +****
131.00 +****
132.00 +*****
133.00 +***
134.00 +********
135.00 +****
136.00 +*****
137.00 +***
138.00 +*****
139.00 +**
140.00 +***0
141.00 +***0
142.00 +**0
                +----+----+----+----+----+----+----+----+----+----+----+----+----+----+----+
                0    5   10   15   20   25   30   35   40   45   50   55   60   65   70   75
```

vara	varb	varc	all
12	10	0	22
15	10	0	25
16	37	0	53
16	23	0	39
15	10	0	25
10	9	0	19
5	8	0	13
1	5	0	6
1	5	0	6
3	5	0	8
3	5	0	8
6	7	0	13
4	8	0	12
3	7	0	10
3	5	0	8
1	5	0	6
6	5	0	11
1	5	0	6
3	5	0	8
2	2	0	4
1	2	0	3
3	0	0	3
4	0	0	4
4	0	0	4
5	0	0	5
3	0	0	3
8	0	0	8
4	0	0	4
5	0	0	5
3	0	0	3
5	0	0	5
2	0	0	2
3	1	0	4
3	1	0	4
2	1	0	3

vara	varb	varc	all

Table 067-2 (cont'd.)

HIGGINS PASSAGE

position(km)

	0 5 10 15 20 25 30 35 40 45 50 55 60 65 70 75	vara	varb	varc	all
143.00	+*0	1	1	0	2
144.00	+*000000	1	6	0	7
145.00	+*000000	1	6	0	7
146.00	+000000	0	6	0	6
147.00	+00000000000000	0	14	0	14
148.00	+0000000000000000000000000000000000000000000000000000000000000000000000	0	63	0	63
149.00	+00000000000000000000000000000000000000000000000000	0	48	0	48
150.00	+*00000000000	1	11	0	12
151.00	-*000000	1	6	0	7
152.00	-*000000	1	6	0	7
153.00	+***000000	3	6	0	9
154.00	+*****0	5	1	0	6
155.00	+*****0	5	1	0	6
156.00	+****0	4	1	0	5
157.00	+***0	3	1	0	4
158.00	+**	2	0	0	2
159.00	+**	2	0	0	2
160.00	+*	1	0	0	1
161.00	+*	1	0	0	1
162.00	+**	2	0	0	2
163.00	+*****	5	0	0	5
164.00	+*	1	0	0	1
165.00	+**	2	0	0	2
166.00	+***	3	0	0	3
167.00	+**	2	0	0	2
168.00	+	0	0	0	0
169.00	+	0	0	0	0
170.00	+*	1	0	0	1
171.00	+*	1	0	0	1
172.00	+*	1	0	0	1
173.00	+***	3	0	0	3
174.00	+***	3	0	0	3
175.00	+**	2	0	0	2
176.00	+******	6	0	0	6
177.00	+*****	5	0	0	5
	0 5 10 15 20 25 30 35 40 45 50 55 60 65 70 75	vara	varb	varc	all

Table 067-2 (cont'd.)

position(km)

```
                +----+----+----+----+----+----+----+----+----+----+----+----+----+----+----+----+
                0    5   10   15   20   25   30   35   40   45   50   55   60   65   70   75
178.00 +****                                                                                    
179.00 +***                                                                                     
180.00 +*****000                                                                                
181.00 +*****0000000000000000000000000000000000000000                                           
PRICE ISLAND
182.00 +***000000000000000000000000000000000000000                                              
183.00 +000111                                                                                  
ARRIAGA ISLAND
184.00 +111                                                                                     
185.00 +****                                                                                    
186.00 +**********                                                                              
187.00 +*******                                                                                 
188.00 +***                                                                                     
189.00 +***********                                                                             
190.00 +*00000000                                                                               
BENT HARBOR
191.00 +00000000                                                                                
192.00 +                                                                                        
193.00 +****                                                                                    
194.00 +****                                                                                    
195.00 +***                                                                                     
196.00 +****0000000                                                                             
WEETEEAM BAY
197.00 +******000000000000000000000000000000000000000000000000000000000000000000000000000000x
198.00 +****0000                                                                                
199.00 +*****                                                                                   
200.00 +***                                                                                     
201.00 +***                                                                                     
202.00 +***                                                                                     
203.00 +****                                                                                    
204.00 +******                                                                                  
205.00 +*****                                                                                   
206.00 +*******                                                                                 
207.00 +*                                                                                       
208.00 +****                                                                                    
209.00 +*                                                                                       
210.00 +                                                                                        
                +----+----+----+----+----+----+----+----+----+----+----+----+----+----+----+----+
                0    5   10   15   20   25   30   35   40   45   50   55   60   65   70   75
```

vara	varb	varc	all
4	0	0	4
3	0	0	3
5	3	0	8
5	35	0	40
3	35	0	38
0	3	3	6
0	0	3	3
4	0	0	4
10	0	0	10
7	0	0	7
3	0	0	3
12	0	0	12
1	8	0	9
0	8	0	8
0	0	0	0
4	0	0	4
4	0	0	4
3	0	0	3
4	7	0	11
6	69	0	75
4	4	0	8
5	0	0	5
3	0	0	3
3	0	0	3
3	0	0	3
4	0	0	4
6	0	0	6
5	0	0	5
7	0	0	7
1	0	0	1
4	0	0	4
1	0	0	1
0	0	0	0
vara	varb	varc	all

Table 067-3. Herring statistical spawn summary for section 067.

Year	Total records	Spawn index	Sum length	Av wid	Av int	Av date	SE date	Wt date	Min day	Max day	Ind day	Ind loc
1937	0	0	0	0	0.0	0.0	0.00	0.0	0	0	0	0
1938	2	842107	44530	0	8.0	82.0	8.00	77.5	74	90	2	2
1939	2	943054	49868	0	7.0	80.5	6.50	78.6	74	87	2	2
1940	2	608424	32173	0	5.0	86.5	4.50	82.0	82	91	2	2
1941	2	790953	41825	0	6.0	80.5	9.50	75.4	71	90	2	2
1942	14	839157	44374	23	7.4	87.5	1.91	88.2	67	95	8	9
1943	11	725105	38343	24	6.3	88.7	1.61	88.8	78	93	6	6
1944	11	750124	39666	17	7.9	88.5	1.63	89.0	73	92	5	8
1945	4	276554	14624	10	7.5	84.0	2.35	81.6	79	88	3	4
1946	5	732858	38753	34	7.8	94.0	1.26	94.2	91	97	4	4
1947	4	509897	26963	22	5.5	90.8	2.39	90.5	84	95	4	4
1948	11	591139	31259	14	5.7	93.2	1.02	91.1	84	97	6	6
1949	12	165509	8752	15	6.0	92.0	0.64	92.1	86	95	5	6
1950	9	394105	20840	25	6.3	93.0	0.29	92.6	92	94	3	3
1951	9	280885	14853	13	5.4	94.8	0.66	94.5	90	96	4	5
1952	6	114506	6055	15	5.3	100.8	0.48	100.0	99	102	4	5
1953	3	206735	10932	15	4.3	85.3	2.67	87.7	80	88	2	3
1954	4	77781	4113	13	4.5	79.8	1.11	79.9	77	82	4	4
1955	2	52573	2780	5	4.0	93.0	0.00	93.0	93	93	1	1
1956	1	3461	183	2	1.0	90.0	0.00	90.0	90	90	1	1
1957	0	0	0	0	0.0	0.0	0.00	0.0	0	0	0	0
1958	5	50114	2650	56	4.2	97.2	1.07	97.3	93	99	3	3
1959	2	112350	5941	5	4.0	95.5	4.50	93.8	91	100	2	2
1960	7	219008	11581	10	5.3	94.3	0.18	94.4	94	95	2	5
1961	5	124434	6580	15	5.8	89.6	0.24	89.8	89	90	2	4
1962	13	473796	25054	7	3.8	89.9	1.54	89.8	79	94	5	6
1963	3	39751	2102	11	4.3	95.0	2.00	96.9	93	99	2	1
1964	3	79502	4204	17	5.0	81.0	0.00	81.0	81	81	1	1
1965	6	34588	1829	44	3.7	103.5	0.50	103.6	102	105	3	3
1966	3	112369	5942	59	3.7	101.7	4.37	104.7	93	107	3	3
1967	2	300761	15904	7	6.0	85.0	0.00	85.0	85	85	1	2
1968	3	152101	8043	12	5.0	99.3	0.88	99.4	98	101	3	3
1969	1	17285	914	14	3.0	114.0	0.00	114.0	114	114	1	1
1970	11	447869	23683	119	5.4	83.9	2.09	85.6	63	86	2	3
1971	6	72259	3821	8	4.7	109.5	0.67	109.4	108	111	2	2
1972	32	90319	4776	19	5.3	97.0	0.00	97.0	97	97	1	2
1973	26	493483	26095	13	5.2	94.7	0.89	97.2	85	101	8	5
1974	15	242061	12800	19	2.8	95.4	0.84	91.9	87	98	5	3
1975	14	326688	17275	18	3.9	98.9	0.67	98.7	93	103	6	6
1976	13	259572	13726	10	3.5	99.8	2.10	96.9	86	107	6	7
1977	15	433251	22910	9	3.6	87.8	3.10	86.8	76	105	6	7
1978	66	259043	13698	8	3.8	89.8	0.54	91.9	84	97	9	6
1979	42	328295	17360	10	2.5	94.9	0.50	94.7	94	115	4	7
1980	55	555511	29375	21	2.0	85.9	0.93	87.6	73	94	10	8
1981	73	608518	32178	25	0.0	75.9	0.66	76.3	66	90	13	6
1982	46	559955	29610	23	0.0	75.4	1.05	76.3	67	87	9	8
1983	80	772023	40824	21	0.0	80.1	0.36	79.8	66	86	12	10
1984	37	418406	22125	18	0.0	80.2	1.53	80.2	69	91	6	4
1985	38	425025	22475	22	0.0	86.8	1.50	88.9	71	96	12	7
1986	50	338885	17920	33	0.0	95.8	0.28	96.0	91	99	9	4
All	786	17252150	912281	21	4.3	87.7	0.34	87.0	63	115	46	23

Table 067-4. Spawn summary for section 067 from 1937 to 1986.

A. GENERAL:

There are three main spawning areas in this section:
(i) Kitasu Bay
(ii) Weeteeam Bay and
(iii) Higgins Passage

B. COMPLETENESS OF RECORDS:

The 50 year record should be reasonably complete considering proximity to the former Klemtu cannery and settlement.

C. SPAWNING CONSISTENCY OVER TIME: CONSTANT

If pooled among all localities, there has been a nearly constant annual record of spawnings since 1938 except for the year, 1957.

D. MAGNITUDE OF SPAWNINGS: VERY LARGE

1. NUMBER OF SPAWN YEARS/50 YEARS	= 48/50 (1937-86)
2. NUMBER OF SPAWN YEARS/DOCUMENTED YEARS	= 48/50 (1937-86)
3. CUMULATIVE SPAWN LENGTH	= 912.3 Km.
4. CUMULATIVE SPAWN AREA	= 1725.2 ha.

E. SPAWNING TIME:

1. MEAN UNWEIGHTED DATE (DOY)	= March 29 (87.7)
2. MEAN WEIGHTED DATE (DOY)	= March 28 (87.0)

F. COMMENTS:

Kitasu Bay is a relatively small geographic area but it has a virtually continuous history of spawns recorded every year from 1938 to 1986, except for 1957. A total of 786 spawns have been documented in this Bay with a mean spawning time of March 29. This spawning specificity for this relatively small location indicates that this is the spawning center of a substantial stock. The surrounding area, listed as section 071 has an irregular history of spawns with a mean time of March 27, similar to that of Kitasu Bay. Similarly, some of section 061, which has an irregular spawning history with a mean time of April 3, may also be related to the Kitasu stock.

G. ROE FISHERIES:

1. NUMBER OF SEINE FISHERY YEARS/15 YEARS	= 7/15 (1972-86)
2. NUMBER OF GILLNET FISHERY YEARS/15 YEARS	= 12/15 (1972-86)
3. MEAN SEINE CATCH/YEAR	= 713 tons
4. MEAN GILLNET CATCH/YEAR	= 1381 tons

Table 067-5. History of roe fishery catches by gear type in Kitasu Bay.

SECT. 067	SEINE NET ROE FISHERIES				GILLNET ROE FISHERIES			
YEAR	DATE OPEN (D/Mo)	TIME OPEN (hrs)	HAILED CATCH (Tons)	FISHING AREA	DATE OPEN (D/Mo)	TIME OPEN (hrs)	HAILED CATCH (Tons)	FISHING AREA
1972	-	-	-	-	-	-	-	-
1973	-	-	-	-	-	-	-	-
1974	02/04-04/04	-	1150	Kitasu Bay	25/03-04/04	120	2000	Laredo Sound & Kitasu Bay
1975	28/03	2.0	417	Kitasu Bay	02/03-30/03	672	2351	Laredo Sound & Kitasu Bay
1976	29/03	2.5	1070	Kitasu Bay	21/03-30/03	168	1396	Laredo Sound & Kitasu Bay
1977	20/03	-	350	Kitasu Bay	20/03-25/03	120	958	Kitasu Bay
1978	22/03	7.0	580	Kitasu Bay	23/03-25/03	48	2042	Laredo Sound & Kitasu Bay
1979	-	-	-	-	-	-	-	-
1980	-	-	-	-	18/03-19/03 25/03-26/03	54	661	Kitasu Bay & Weeteeam Bay
1981	-	-	-	-	18/03-20/03	48	220	Laredo Sound
					17/03-18/03	24	1217	Weeteeam Bay
1982	-	-	-	-	21/03-22/03	24	407	Laredo Sound & Kitasu Bay
1983	-	-	-	-	21/03	5	2500	Laredo Sound
1984	16/03 & 17/03	4.8	3900	Higgins Pass	27/03	45	748	Kitasu Bay
1985	-	-	-	-	31/03 & 01/04	17	(2262)	Weeteeam & Kitasu Bays & sect. 71, 72, 74 & 85
1986	29/03	4.5	2112	Higgins Pass	05/04	9	691	Kitasu Bay

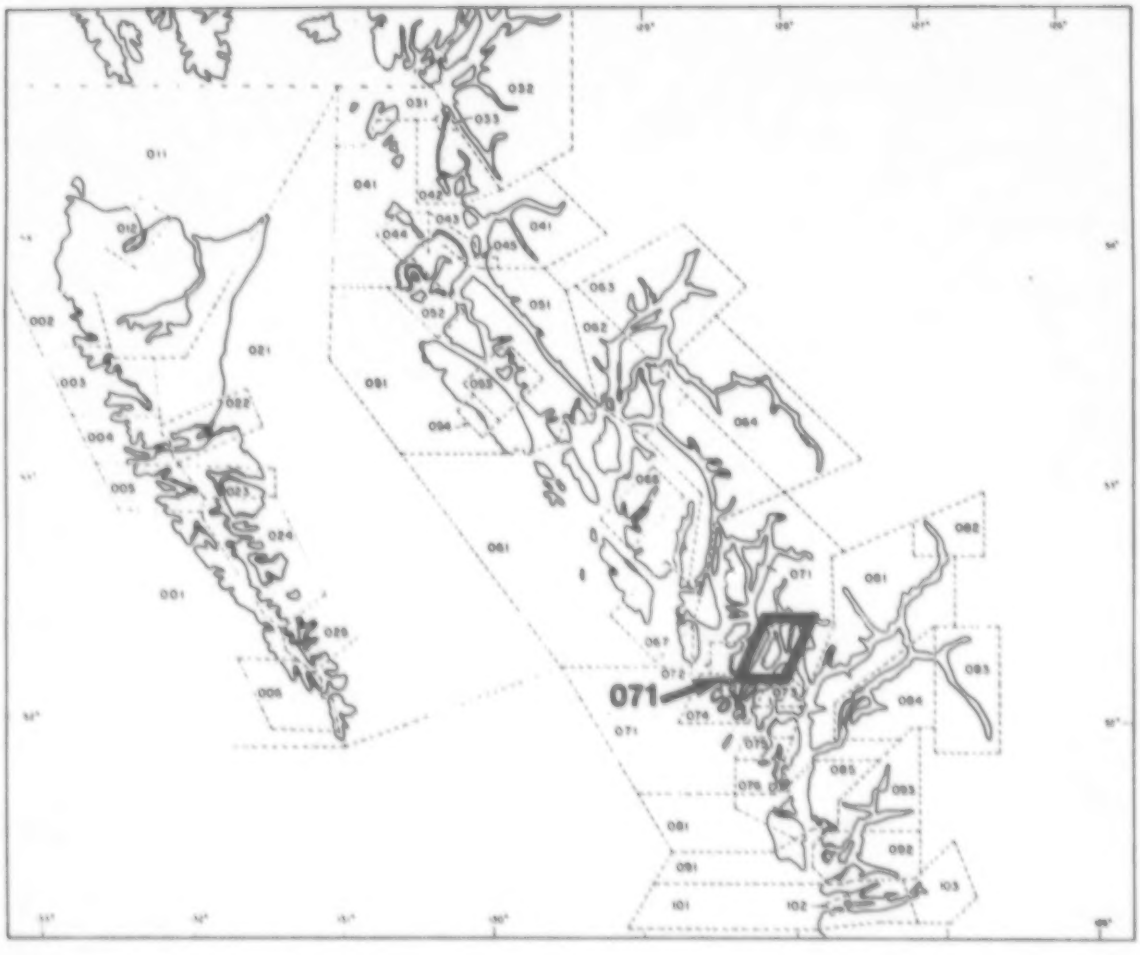


Fig. 071-1. Overview map showing location of section 071, Other Area 7.

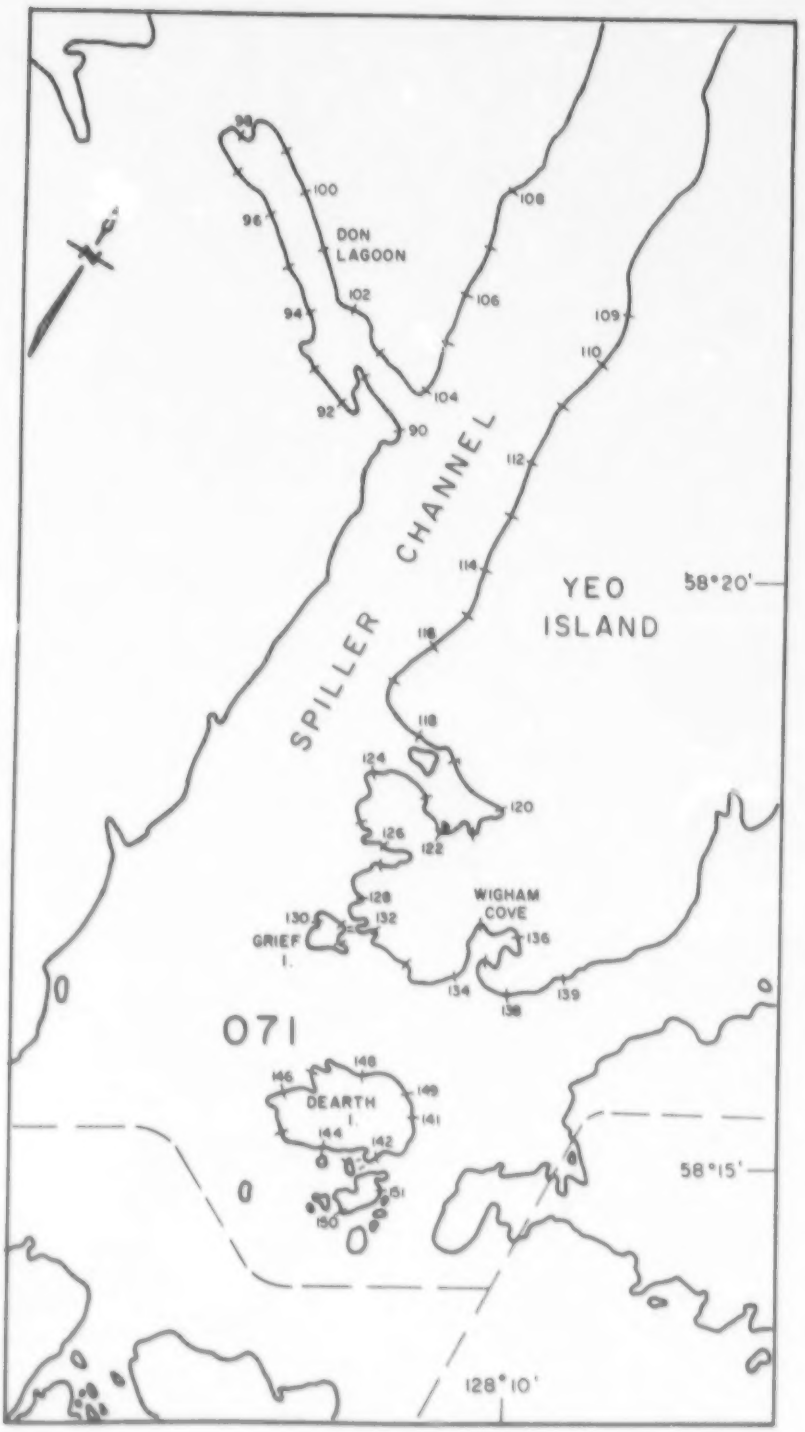


Fig. 071-2. Detailed map of section 071, Other Area 7.

Table 071-1. Section 071 - spawn position by year.

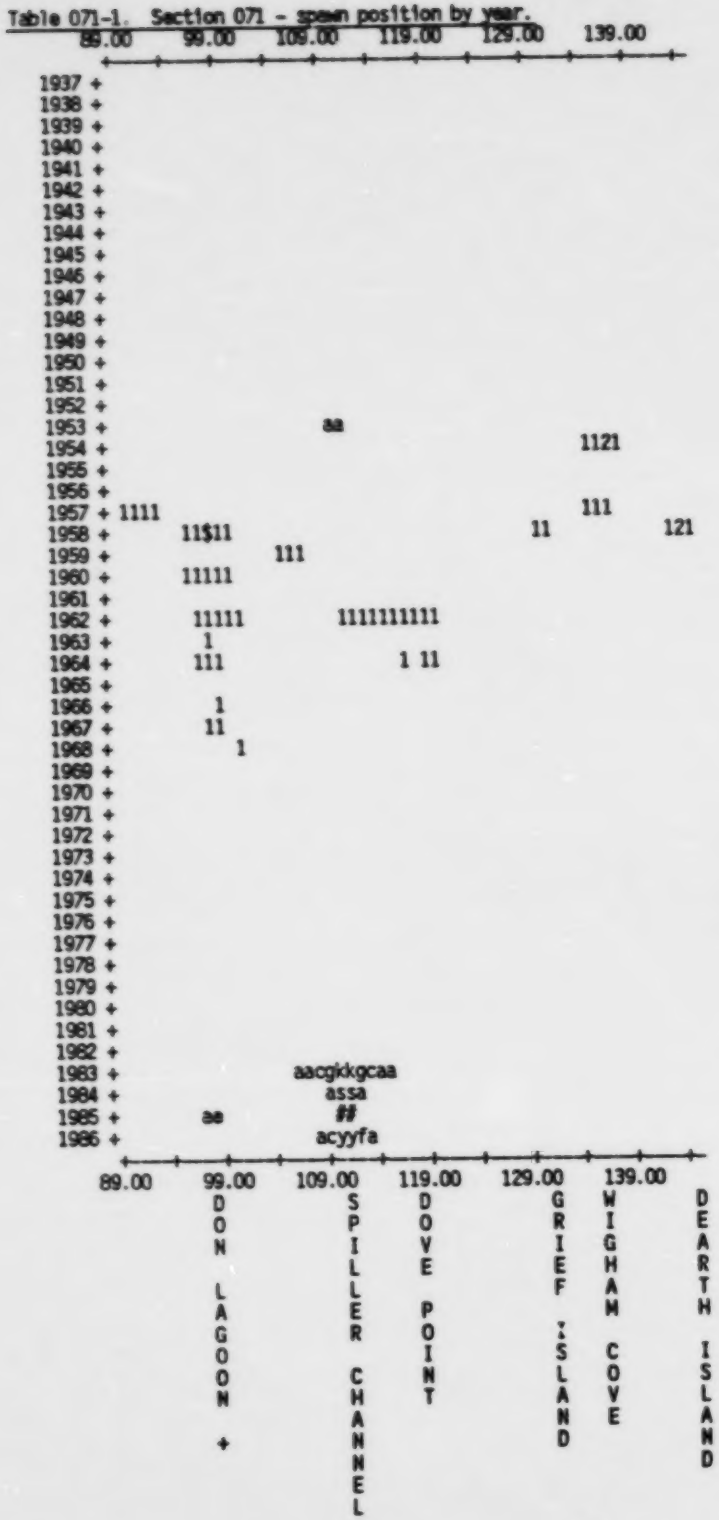
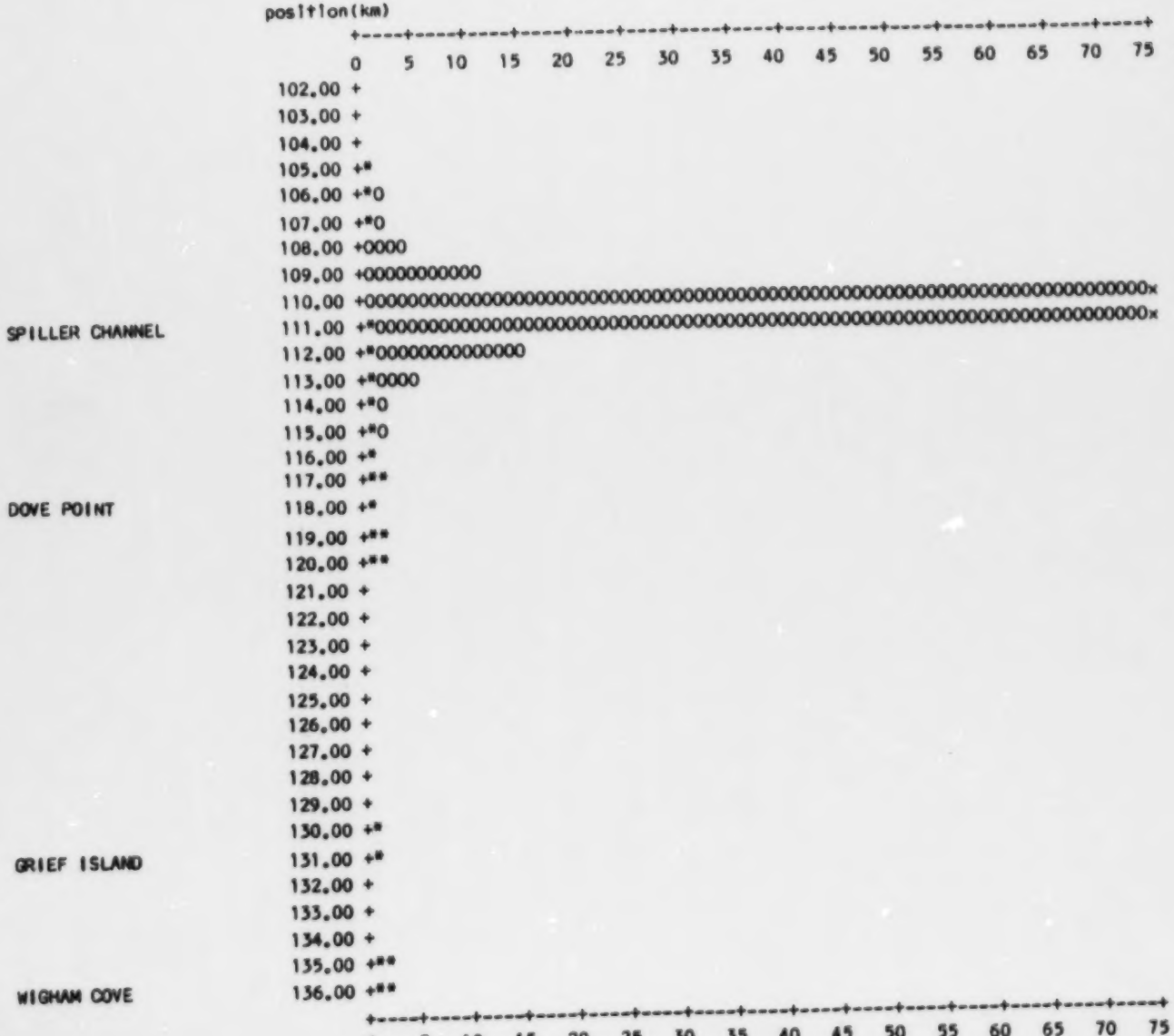


Table 071-2. Section 071 - histogram of cumulative spawn frequency over distance

```
                    position(km)
                          0    5   10   15   20   25   30   35   40   45   50   55   60   65   70   75  vara varh varc  all
                          +----+----+----+----+----+----+----+----+----+----+----+----+----+----+----+----+
                    68.00 +                                                                               0    0    0    0
                    69.00 +II                                                                             0    0    2    2
HUNTER CHANNEL      70.00 +II                                                                             0    0    2    2
                    71.00 +                                                                               0    0    0    0
                    72.00 +                                                                               0    0    0    0
                    73.00 +                                                                               0    0    0    0
                    74.00 +                                                                               0    0    0    0
                    75.00 +                                                                               0    0    0    0
                    76.00 +                                                                               0    0    0    0
                    77.00 +                                                                               0    0    0    0
                    78.00 +III                                                                            0    0    3    3
GERMAN POINT        79.00 +IIIII                                                                          0    0    5    5
LAMA PASSAGE        80.00 +II                                                                             0    0    2    2
                    81.00 +                                                                               0    0    0    0
                    82.00 +                                                                               0    0    0    0
                    83.00 +                                                                               0    0    0    0
                    84.00 +                                                                               0    0    0    0
                    85.00 +                                                                               0    0    0    0
                    86.00 +                                                                               0    0    0    0
                    87.00 +                                                                               0    0    0    0
                    88.00 +                                                                               0    0    0    0
                    89.00 +                                                                               0    0    0    0
                    90.00 +*                                                                              1    0    0    1
                    91.00 +*                                                                              1    0    0    1
                    92.00 +*                                                                              1    0    0    1
                    93.00 +*                                                                              1    0    0    1
                    94.00 +                                                                               0    0    0    0
                    95.00 +                                                                               0    0    0    0
                    96.00 +**                                                                             2    0    0    2
                    97.00 +****0                                                                          4    1    0    5
DON LAGOON +        98.00 +******000000                                                                   6    6    0   12
                    99.00 +******                                                                        6    0    0    6
                   100.00 +***                                                                           3    0    0    3
                   101.00 +**                                                                            2    0    0    2
                          +----+----+----+----+----+----+----+----+----+----+----+----+----+----+----+----+
                          0    5   10   15   20   25   30   35   40   45   50   55   60   65   70   75  vara varh varc  all
```

Table 071-2 (cont'd.)



	vara	varh	varc	all
102.00	0	0	0	0
103.00	0	0	0	0
104.00	0	0	0	0
105.00	1	0	0	1
106.00	1	1	0	2
107.00	1	1	0	2
108.00	0	4	0	4
109.00	0	11	0	11
110.00	0	96	0	96
111.00	1	96	0	97
112.00	1	14	0	15
113.00	1	4	0	5
114.00	1	1	0	2
115.00	1	1	0	2
116.00	1	0	0	1
117.00	2	0	0	2
118.00	1	0	0	1
119.00	2	0	0	2
120.00	2	0	0	2
121.00	0	0	0	0
122.00	0	0	0	0
123.00	0	0	0	0
124.00	0	0	0	0
125.00	0	0	0	0
126.00	0	0	0	0
127.00	0	0	0	0
128.00	0	0	0	0
129.00	0	0	0	0
130.00	1	0	0	1
131.00	1	0	0	1
132.00	0	0	0	0
133.00	0	0	0	0
134.00	0	0	0	0
135.00	2	0	0	2
136.00	2	0	0	2
	vara	varh	varc	all

Table 071-2 (cont'd.)

		0	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	vara	varh	varc	all
	137.00	+***																3	0	0	3
	138.00	+*																1	0	0	1
	139.00	+																0	0	0	0
	140.00	+																0	0	0	0
	141.00	+																0	0	0	0
	142.00	+																0	0	0	0
	143.00	+*																1	0	0	1
	144.00	+**																2	0	0	2
DEARTH ISLAND	145.00	+*																1	0	0	1
	146.00	+*																1	0	0	1
	147.00	+*																1	0	0	1
	148.00	+*																1	0	0	1
	149.00	+*																1	0	0	1
	150.00	+																0	0	0	0
		0	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	vara	varh	varc	all

Table 071-3. Herring statistical spawn summary for section 071.

Year	Total records	Spawn index	Sum length	Av wid	Av int	Av date	SE date	Wt date	Min day	Max day	Ind day	Ind loc
1937	0	0	0	0	0.0	0.0	0.00	0.0	0	0	0	0
1938	0	0	0	0	0.0	0.0	0.00	0.0	0	0	0	0
1939	1	48738	3217	0	5.0	91.0	0.00	91.0	91	91	1	1
1940	2	12181	804	0	4.0	83.5	18.50	102.0	65	102	2	2
1941	0	0	0	0	0.0	0.0	0.00	0.0	0	0	0	0
1942	4	163059	10763	8	5.5	92.3	1.25	91.2	91	96	2	3
1943	1	6227	411	37	5.0	91.0	0.00	91.0	91	91	1	1
1944	1	9696	640	14	5.0	95.0	0.00	95.0	95	95	1	1
1945	1	12181	804	5	1.0	75.0	0.00	75.0	75	75	1	1
1946	0	0	0	0	0.0	0.0	0.00	0.0	0	0	0	0
1947	0	0	0	0	0.0	0.0	0.00	0.0	0	0	0	0
1948	2	31845	2102	5	5.0	100.5	8.50	106.8	92	109	2	2
1949	0	0	0	0	0.0	0.0	0.00	0.0	0	0	0	0
1950	6	307409	20291	11	6.0	95.5	2.01	95.3	91	100	2	2
1951	5	170316	11242	3	4.2	101.8	3.20	99.8	89	105	2	5
1952	7	103853	6855	4	5.6	92.1	3.84	95.4	84	103	2	1
1953	9	100384	6626	8	6.8	84.3	0.60	85.0	82	86	3	3
1954	3	29088	1920	4	5.0	92.0	0.00	92.0	92	92	1	1
1955	4	52964	3496	6	7.0	86.0	0.00	86.0	86	86	1	2
1956	0	0	0	0	0.0	0.0	0.00	0.0	0	0	0	0
1957	2	76159	5027	6	5.0	84.0	0.00	84.0	84	84	1	2
1958	5	181952	12010	4	3.8	83.0	2.79	82.7	76	92	5	3
1959	1	34618	2285	4	3.0	84.0	0.00	84.0	84	84	1	1
1960	1	69236	4570	5	5.0	80.0	0.00	80.0	80	80	1	1
1961	0	0	0	0	0.0	0.0	0.00	0.0	0	0	0	0
1962	2	207707	13710	3	5.0	94.0	0.00	94.0	94	94	1	2
1963	1	4151	274	3	5.0	87.0	0.00	87.0	87	87	1	1
1964	3	48465	3199	4	5.7	86.3	1.67	85.1	83	88	2	2
1965	0	0	0	0	0.0	0.0	0.00	0.0	0	0	0	0
1966	2	1379	91	5	2.0	103.0	3.00	104.8	100	106	2	2
1967	1	8999	594	3	3.0	94.0	0.00	94.0	94	94	1	1
1968	1	1379	91	2	1.0	78.0	0.00	78.0	78	78	1	1
1969	0	0	0	0	0.0	0.0	0.00	0.0	0	0	0	0
1970	0	0	0	0	0.0	0.0	0.00	0.0	0	0	0	0
1971	0	0	0	0	0.0	0.0	0.00	0.0	0	0	0	0
1972	0	0	0	0	0.0	0.0	0.00	0.0	0	0	0	0
1973	0	0	0	0	0.0	0.0	0.00	0.0	0	0	0	0
1974	0	0	0	0	0.0	0.0	0.00	0.0	0	0	0	0
1975	0	0	0	0	0.0	0.0	0.00	0.0	0	0	0	0
1976	0	0	0	0	0.0	0.0	0.00	0.0	0	0	0	0
1977	0	0	0	0	0.0	0.0	0.00	0.0	0	0	0	0
1978	0	0	0	0	0.0	0.0	0.00	0.0	0	0	0	0
1979	0	0	0	0	0.0	0.0	0.00	0.0	0	0	0	0
1980	3	13408	885	84	6.3	81.0	0.00	81.0	81	81	1	1
1981	0	0	0	0	0.0	0.0	0.00	0.0	0	0	0	0
1982	1	24392	1610	10	0.0	82.0	0.00	82.0	82	82	1	1
1983	11	576867	38077	5	0.0	83.0	0.00	83.0	83	83	1	1
1984	27	308530	20365	6	0.0	78.3	1.61	78.3	73	91	2	2
1985	54	461015	30430	9	0.0	89.4	0.90	88.8	71	100	8	3
1986	48	479725	31665	14	0.0	94.5	0.75	96.7	90	121	7	3
All	209	3545918	234054	10	5.2	88.9	0.60	89.0	65	121	32	22

Table 071-4. Spawn summary for section 071 from 1937 to 1986.

A. GENERAL:

There is one main spawning area in Spiller Channel in the vicinity of Don Lagoon-Dearth Island.

B. COMPLETENESS OF RECORDS:

The 50 year record should be reasonably complete considering proximity to Bella Bella, New Bella Bella and Shearwater (Kliktsoatli Harbour).

C. SPAWNING CONSISTENCY OVER TIME: FREQUENT

There have been two main spawning episodes, 1939-68 and 1980-86.

D. MAGNITUDE OF SPAWNINGS: MEDIUM

1. NUMBER OF SPAWN YEARS/50 YEARS	= 29/50 (1937-86)
2. NUMBER OF SPAWN YEARS/DOCUMENTED YEARS	= 29/50 (1937-86)
3. CUMULATIVE SPAWN LENGTH	= 234.1 Km.
4. CUMULATIVE SPAWN AREA	= 354.6 ha.

E. SPAWNING TIME:

1. MEAN UNWEIGHTED DATE (DOY)	= March 31 (88.9)
2. MEAN WEIGHTED DATE (DOY)	= March 31 (89.0)

F. COMMENTS:

Similar spawning dates and geographical proximity suggest that the frequent spawns in Spiller Channel belong to the much larger Kitasu spawning stock to the west in section 067.

G. ROE FISHERIES:

1. NUMBER OF SEINE FISHERY YEARS/15 YEARS	= 1/15 (1972-86)
2. NUMBER OF GILLNET FISHERY YEARS/15 YEARS	= 2/15 (1972-86)
3. MEAN SEINE CATCH/YEAR	= 3045 tons
4. MEAN GILLNET CATCH/YEAR	= 164 tons

Table 071-5. History of roe fishery catches by gear type in Other Area 7.

SECT. 071	SEINE NET ROE FISHERIES				GILLNET ROE FISHERIES			
YEAR	DATE OPEN (D/Mo)	TIME OPEN (hrs)	HAILED CATCH (Tons)	FISHING AREA	DATE OPEN (D/Mo)	TIME OPEN (hrs)	HAILED CATCH (Tons)	FISHING AREA
1972	-	-	-	-	-	-	-	-
1973	-	-	-	-	-	-	-	-
1974	-	-	-	-	-	-	-	-
1975	-	-	-	-	-	-	-	-
1976	-	-	-	-	-	-	-	-
1977	-	-	-	-	-	-	-	-
1978	-	-	-	-	-	-	-	-
1979	-	-	-	-	-	-	-	-
1980	-	-	-	-	-	-	-	-
1981	-	-	-	-	-	-	-	-
1982	-	-	-	-	-	-	-	-
1983	-	-	-	-	-	-	-	-
1984	-	-	-	-	-	-	-	-
1985	11/03	5.0	3045	Spiller Ch. (head)	31/03 & 01/04	17	(2262)	Spiller Ch. & sect. 67, 74, 76 & 85
1986	-	-	-	-	05/04	9	164	Spiller Ch.

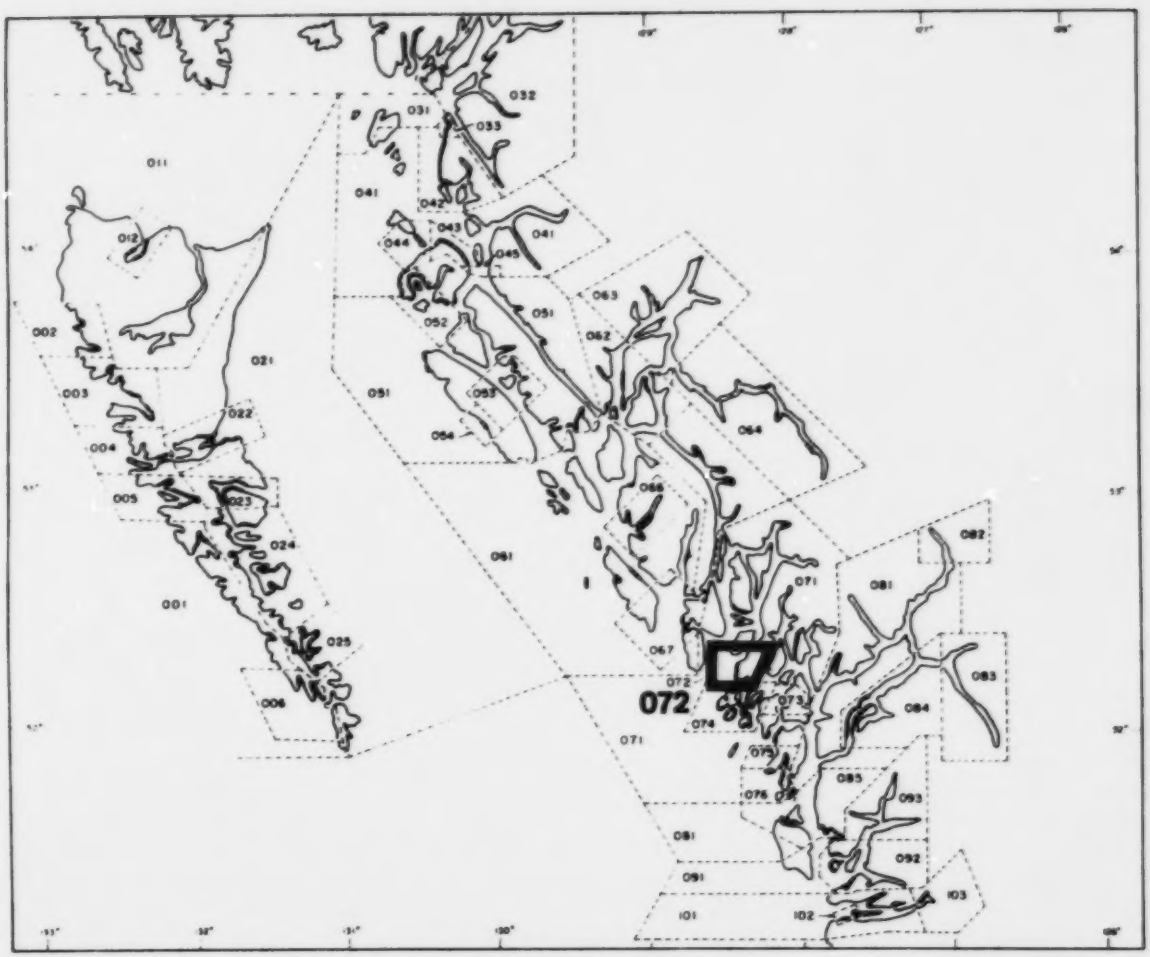


Fig. 072-1. Overview map showing location of section 072, Powell Anchorage.

Fig. 072-2. Detailed map of section 072, Powell Anchorage.

Table 072-1. Section 072 - spawn poistion by year.

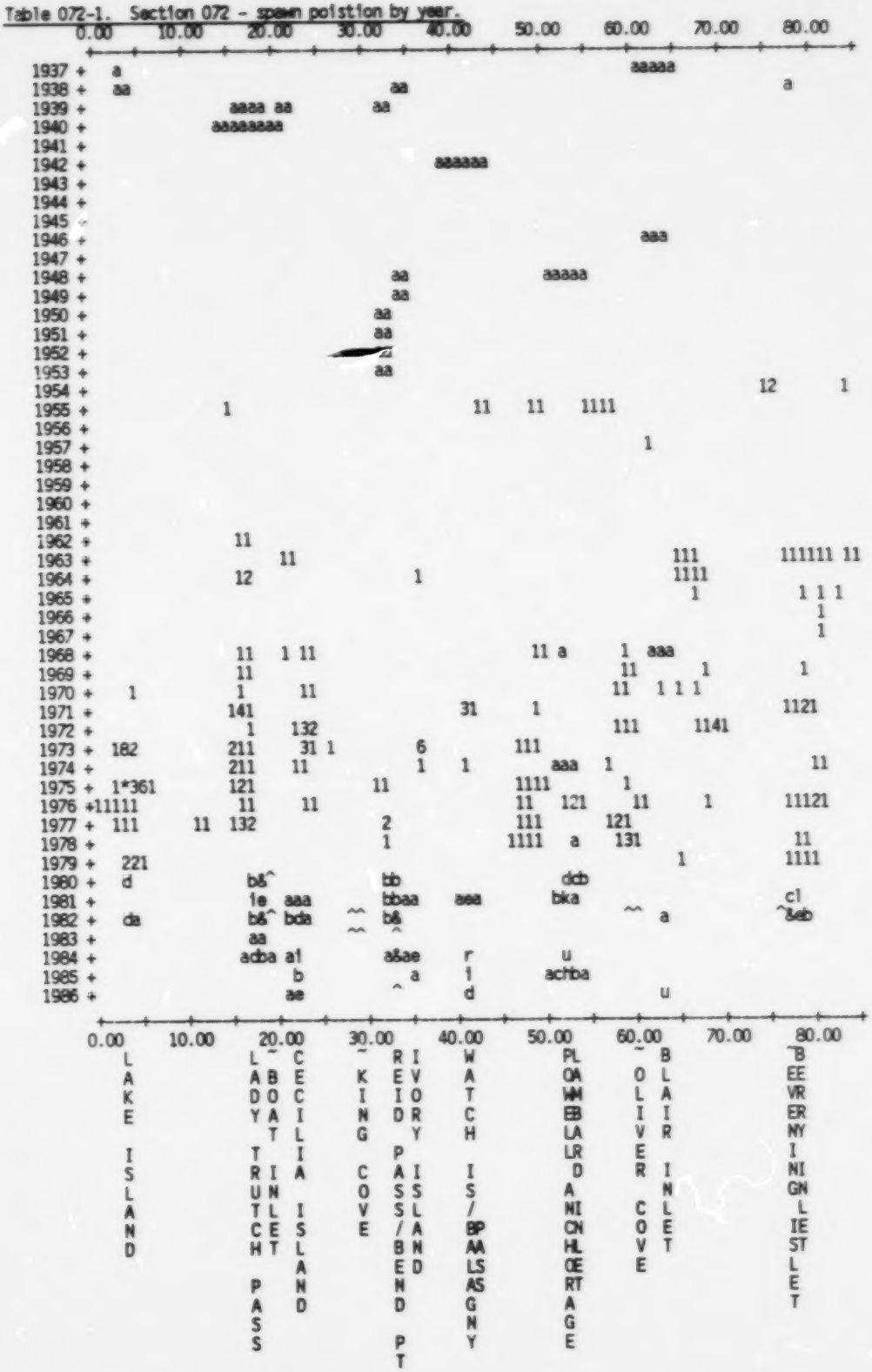


Table 072-2. Section 72 - histogram of cumulative spawn frequency over distance

```
                        position(km)
                              0    5   10   15   20   25   30   35   40   45   50   55   60   65   70   75  vara varb varc  all
                              +----+----+----+----+----+----+----+----+----+----+----+----+----+----+----+----+
                        0.00 +*                                                                              1    0    0    1
                        1.00 +*                                                                              1    0    0    1
                        2.00 +****                                                                          4    0    0    4
LAKE ISLAND             3.00 +************************0000000000                                           23   10    0   33
                        4.00 +***********00                                                                 10    2    0   12
                        5.00 +*******                                                                       7    0    0    7
                        6.00 +*                                                                             1    0    0    1
                        7.00 +                                                                              0    0    0    0
                        8.00 +                                                                              0    0    0    0
                        9.00 +                                                                              0    0    0    0
                       10.00 +                                                                              0    0    0    0
                       11.00 +*                                                                             1    0    0    1
                       12.00 +*                                                                             1    0    0    1
                       13.00 +                                                                              0    0    0    0
                       14.00 +0                                                                             0    1    0    1
                       15.00 +********0                                                                     8    1    0    9
                       16.00 +******************000                                                       17    3    0   20
LADY TRUTCH PASS       17.00 +**************0000000000000000000                                          13   20    0   33
                       18.00 +00000000000000111                                                            0   14    3   17
 BOAT INLET            19.00 +000111                                                                       0    3    3    6
                       20.00 +0                                                                            0    1    0    1
                       21.00 +**0000000                                                                    2    7    0    9
CECILIA ISLAND         22.00 +***00000000000000000000                                                      3   22    0   25
                       23.00 +***********00                                                                10    2    0   12
                       24.00 +******                                                                      6    0    0    6
                       25.00 +                                                                             0    0    0    0
                       26.00 +*                                                                            1    0    0    1
                       27.00 +                                                                             0    0    0    0
                       28.00 +11111                                                                        0    0    5    5
 KING COVE             29.00 +11111                                                                        0    0    5    5
                       30.00 +                                                                             0    0    0    0
                       31.00 +*                                                                            1    0    0    1
                       32.00 +****000000000000                                                             4   12    0   16
REID PASSAGE/ BEND PT. 33.00 +00000000000011111111                                                         0   12    6   18
                              +----+----+----+----+----+----+----+----+----+----+----+----+----+----+----+----+
                              0    5   10   15   20   25   30   35   40   45   50   55   60   65   70   75  vara varb varc  all
```

Table 072-2 (cont'd.)

position(km)

```
                                  +----+----+----+----+----+----+----+----+----+----+----+----+----+----+----+----+
                                  0    5   10   15   20   25   30   35   40   45   50   55   60   65   70   75
                          34.00 +00000
IVORY ISLAND              35.00 +0000000000
                          36.00 +********
                          37.00 +
                          38.00 +
                          39.00 +0
                          40.00 +00
WATCH ISLAND/BALAGNY PASS 41.00 +****0000000000000000000000000000000000000000
                          42.00 +*00
                          43.00 +*0
                          44.00 +*0
                          45.00 +
                          46.00 +*
                          47.00 +*****
                          48.00 +*****
                          49.00 +*******
                          50.00 +***0
                          51.00 +0000000
POWELL ANCHORAGE          52.00 +*00000000000000000000000000000000000000000000000000
LAMBARD INLET             53.00 +**000000000
                          54.00 +*0000
                          55.00 +*0
                          56.00 +*
                          57.00 +***
                          58.00 +******
                          59.00 +*********|
 OLIVER COVE              60.00 +****|
                          61.00 +*0
                          62.00 +*000
BLAIR INLET               63.00 +*0000000000000000000000000
                          64.00 +000
                          65.00 +****0
                          66.00 +**
                          67.00 +*****
                          68.00 +****
                                  +----+----+----+----+----+----+----+----+----+----+----+----+----+----+----+----+
                                  0    5   10   15   20   25   30   35   40   45   50   55   60   65   70   75
```

vara	varb	varc	all
0	5	0	5
0	10	0	10
8	0	0	8
0	0	0	0
0	0	0	0
0	1	0	1
0	2	0	2
4	37	0	41
1	2	0	3
1	1	0	2
1	1	0	2
0	0	0	0
1	0	0	1
5	0	0	5
5	0	0	5
7	0	0	7
3	1	0	4
0	7	0	7
1	47	0	48
2	9	0	11
1	4	0	5
1	1	0	2
1	0	0	1
3	0	0	3
6	0	0	6
9	0	1	10
4	0	1	5
1	1	0	2
1	3	0	4
1	25	0	26
0	3	0	3
4	1	0	5
2	0	0	2
5	0	0	5
4	0	0	4
vara	varb	varc	all

Table 072-2 (cont'd.)

position(km)

		0 5 10 15 20 25 30 35 40 45 50 55 60 65 70 75	vara	varb	varc	all
	69.00	+****	4	0	0	4
	70.00	+*	1	0	0	1
	71.00	+	0	0	0	0
	72.00	+	0	0	0	0
	73.00	+	0	0	0	0
	74.00	+	0	0	0	0
	75.00	+*	1	0	0	1
	76.00	+**I	2	0	1	3
EVENING ISLET	77.00	+****OOOOOOI	4	6	1	11
BERRY INLET	78.00	+*****OOOOOOOOOOOOOOOOO	5	18	0	23
	79.00	+*********OO	8	2	0	10
	80.00	+******	6	0	0	6
	81.00	+******	6	0	0	6
	82.00	+*	1	0	0	1
	83.00	+*	1	0	0	1
	84.00	+**	2	0	0	2
	85.00	+*	1	0	0	1
	86.00	+*	1	0	0	1
	87.00	+	0	0	0	0
	88.00	+	0	0	0	0
	89.00	+	0	0	0	0
	90.00	+	0	0	0	0
	91.00	+	0	0	0	0
	92.00	+	0	0	0	0
	93.00	+	0	0	0	0
	94.00	+	0	0	0	0
	95.00	+	0	0	0	0
	96.00	+	0	0	0	0
	97.00	+	0	0	0	0
	98.00	+	0	0	0	0
	99.00	+	0	0	0	0
	100.00	+	0	0	0	0
	101.00	+	0	0	0	0
	102.00	+I	0	0	1	1
LADY DOUGLAS IS.	103.00	+I	0	0	1	1
		0 5 10 15 20 25 30 35 40 45 50 55 60 65 70 75	vara	varb	varc	all

Table 072-2 (cont'd.)

position(km)

		0	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	vara	varh	varc	all
	104.00	+																0	0	0	0
	105.00	+I																0	0	2	2
	106.00	+I																0	0	2	2
LANG PT.	107.00	+																0	0	0	0
	108.00	+																0	0	0	0
	109.00	+																0	0	0	0
	110.00	+I																0	0	1	1
	111.00	+I																0	0	1	1
CROSS PT.	112.00	+																0	0	0	0
	113.00	+																0	0	0	0
	114.00	+																0	0	0	0
	115.00	+																0	0	0	0
	116.00	+																0	0	0	0
	117.00	+																0	0	0	0
	118.00	+																0	0	0	0
	119.00	+																0	0	0	0
	120.00	+																0	0	0	0
	121.00	+																0	0	0	0
	122.00	+																0	0	0	0
	123.00	+																0	0	3	3
	124.00	+II																0	0	3	3
MOSS PASSAGE	125.00	+II																0	0	0	0
	126.00	+																			
			0	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	vara	varh	varc	all

Table 072-3. Herring statistical spawn summary for section 072.

Year	Total records	Spawn index	Sum length	Av wid	Av int	Av date	SE date	Wt date	Min day	Max day	Ind day	Ind loc
1937	2	46849	3400	0	6.0	80.5	0.50	80.1	80	81	2	2
1938	3	19897	1444	0	5.7	86.3	2.33	84.9	84	91	2	3
1939	4	72023	5227	0	5.0	84.8	0.75	84.2	84	87	2	4
1940	2	99746	7239	0	8.0	81.5	1.50	82.7	80	83	2	2
1941	0	0	0	0	0.0	0.0	0.00	0.0	0	0	0	0
1942	1	68895	5000	37	9.0	79.0	0.00	79.0	79	79	1	1
1943	0	0	0	0	0.0	0.0	0.00	0.0	0	0	0	0
1944	0	0	0	0	0.0	0.0	0.00	0.0	0	0	0	0
1945	0	0	0	0	0.0	0.0	0.00	0.0	0	0	0	0
1946	1	25188	1828	4	7.0	80.0	0.00	80.0	80	80	1	1
1947	0	0	0	0	0.0	0.0	0.00	0.0	0	0	0	0
1948	2	60448	4387	12	6.0	88.5	10.50	81.5	78	99	2	2
1949	1	3775	274	5	3.0	85.0	0.00	85.0	85	85	1	1
1950	1	3775	274	14	3.0	74.0	0.00	74.0	74	74	1	1
1951	1	3775	274	5	3.0	84.0	0.00	84.0	84	84	1	1
1952	2	11340	823	3	3.0	103.5	2.50	103.8	101	106	2	2
1953	1	6338	460	5	3.0	82.0	0.00	82.0	82	82	1	1
1954	4	23920	1736	4	6.0	73.0	0.00	73.0	73	73	1	1
1955	4	75564	5484	5	6.0	97.0	0.00	97.0	97	97	1	3
1956	0	0	0	0	0.0	0.0	0.00	0.0	0	0	0	0
1957	1	2522	183	5	5.0	84.0	0.00	84.0	84	84	1	1
1958	0	0	0	0	0.0	0.0	0.00	0.0	0	0	0	0
1959	0	0	0	0	0.0	0.0	0.00	0.0	0	0	0	0
1960	0	0	0	0	0.0	0.0	0.00	0.0	0	0	0	0
1961	0	0	0	0	0.0	0.0	0.00	0.0	0	0	0	0
1962	1	5043	366	3	3.0	91.0	0.00	91.0	91	91	1	1
1963	4	147353	10694	4	5.5	81.3	3.79	83.0	71	87	3	3
1964	4	56039	4067	19	5.5	79.8	1.75	78.2	78	85	2	3
1965	4	17651	1281	5	4.5	77.5	3.50	76.0	74	88	2	2
1966	1	3775	274	9	3.0	78.0	0.00	78.0	78	78	1	1
1967	1	1254	91	9	3.0	84.0	0.00	84.0	84	84	1	1
1968	7	52512	3811	10	3.6	90.3	5.31	83.4	75	109	3	5
1969	4	28963	2102	8	3.5	83.8	0.25	83.9	83	84	2	3
1970	7	62350	4525	11	4.1	79.6	2.86	80.4	68	84	3	3
1971	10	83763	6079	10	4.2	89.0	2.17	92.6	81	100	7	6
1972	13	55295	4013	11	3.1	95.8	3.04	92.6	90	115	2	2
1973	27	72119	5234	36	4.2	85.0	0.00	85.0	85	85	1	5
1974	9	65753	4772	19	3.7	89.7	4.14	90.1	73	105	5	7
1975	27	88461	6420	17	4.0	96.0	0.00	96.0	96	96	1	1
1976	12	150384	10914	6	2.5	93.2	2.15	94.6	70	97	5	5
1977	10	137266	9962	11	5.3	90.2	2.05	89.9	78	94	3	4
1978	10	49742	3610	26	3.4	88.9	0.99	88.7	80	90	3	6
1979	6	42811	3107	37	3.7	87.0	3.52	88.6	72	98	5	3
1980	13	148565	10782	40	5.0	84.2	1.04	83.9	81	91	5	6
1981	41	225714	16381	18	0.0	78.1	0.96	75.1	65	87	8	7
1982	38	350772	25457	17	0.0	81.5	0.31	81.9	78	84	4	16
1983	12	61110	4435	14	0.0	84.6	0.97	84.7	82	93	5	4
1984	60	195896	14217	18	0.0	87.0	0.93	85.1	74	98	10	7
1985	20	158045	11470	23	0.0	90.7	0.16	90.9	89	91	2	4
1986	31	54151	3930	20	0.0	95.7	0.26	95.3	88	96	2	4
All	402	2838846	206027	18	4.2	87.0	0.41	85.4	65	115	38	23

Table 072-4. Spawn summary for section 072 from 1937 to 1986.

A. GENERAL:

There are five main spawning areas in Powell Anchorage:

(i) Lady Trutch Pass
(ii) Lambard Inlet
(iii) Reid Passage
(iv) Blair Inlet and
(v) Berry Inlet

B. COMPLETENESS OF RECORDS:

The 50 year record should be reasonably complete considering proximity to Bella Bella, New Bella Bella and Shearwater (Kliktsoatli Harbour).

C. SPAWNING CONSISTENCY OVER TIME: CONSTANT

If pooled among all localities, there has been a nearly constant annual record of spawnings since 1937 except for the years, 1941-47 and 1956-1961.

D. MAGNITUDE OF SPAWNINGS: MEDIUM

1. NUMBER OF SPAWN YEARS/50 YEARS	= 40/50 (1937-86)
2. NUMBER OF SPAWN YEARS/DOCUMENTED YEARS	= 40/50 (1937-86)
3. CUMULATIVE SPAWN LENGTH	= 206.0 Km.
4. CUMULATIVE SPAWN AREA	= 283.9 ha.

E. SPAWNING TIME:

1. MEAN UNWEIGHTED DATE (DOY)	= March 28 (87.0)
2. MEAN WEIGHTED DATE (DOY)	= March 26 (85.4)

F. COMMENTS:

Sections 072, 073 and 074 represent a complex cluster of spawns with continuous records since the mid-1930's. Each of the 3 sections is geographically small with nearly identical mean spawning times (March 28, 30 and 29 for 072, 073 and 074 respectively). These locations are part of the same stock but it is not clear if this group is distinct from adjacent spawning areas either to the north or the south.

G. ROE FISHERIES:

1. NUMBER OF SEINE FISHERY YEARS/15 YEARS	= 2/15 (1972-86)
2. NUMBER OF GILLNET FISHERY YEARS/15 YEARS	= 8/15 (1972-86)
3. MEAN SEINE CATCH/YEAR	= 1285 tons
4. MEAN GILLNET CATCH/YEAR	= 1410 tons

Table 072-5. History of roe fishery catches by gear type in Powell Anchorage.

SECT. 072	SEINE NET ROE FISHERIES				GILLNET ROE FISHERIES			
YEAR	DATE OPEN (D/Mo)	TIME OPEN (nrs)	HAILED CATCH (Tons)	FISHING AREA	DATE OPEN (D/Mo)	TIME OPEN (hrs)	HAILED CATCH (Tons)	FISHING AREA
1972	-	-	-	-	-	-	-	-
1973	-	-	-	-	-	-	-	-
1974	-	-	-	-	-	-	-	-
1975	26/03	-	665	Powell Anch.	02/04-01/04	720	(3539)	all area 7
1976	22/03	5.0	1905	Powell Anch.	14/03-29/03	264	2290	Cecilia Is.
1977	-	-	-	-	06/03-25/03	360	(5000)	Powell Anch. & sect. 74
1978	-	-	-	-	05/03-25/03	384	(8040)	all area 7
1979	-	-	-	-	-	-	-	-
1980	-	-	-	-	-	-	-	-
1981	-	-	-	-	14/03-16/03	48	792	Powell Anch.
1982	-	-	-	-	-	-	-	-
1983	-	-	-	-	-	-	-	-
1984	-	-	-	-	27/03	45	2488	Cecilia Is.
1985	-	-	-	-	31/03 & 01/04	17	(2262)	Powell Anch. & sect. 67, 71, 74 & 85
1986	-	-	-	-	05/04	9	69	Powell Anch.

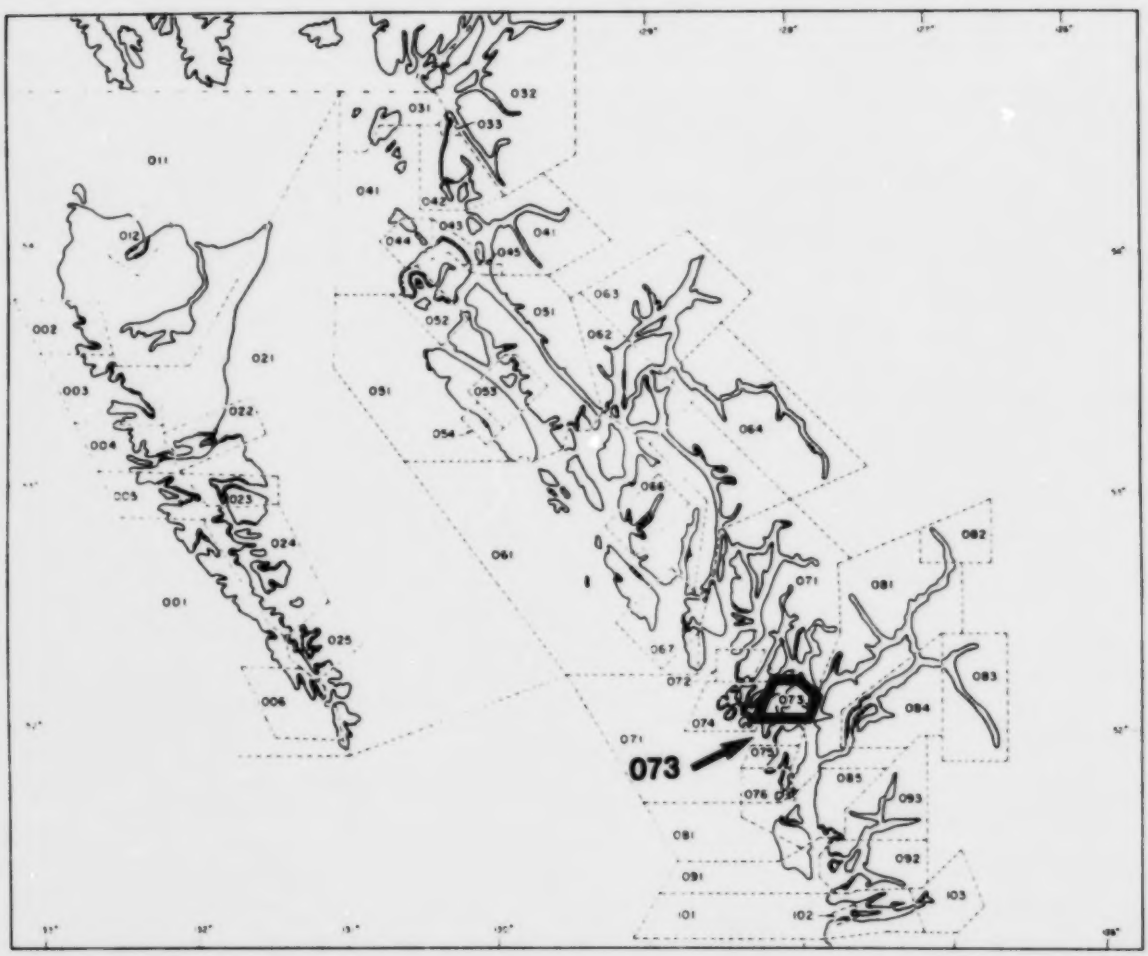


Fig. 073-1. Overview map showing location of section 073, Gunboat Passage.

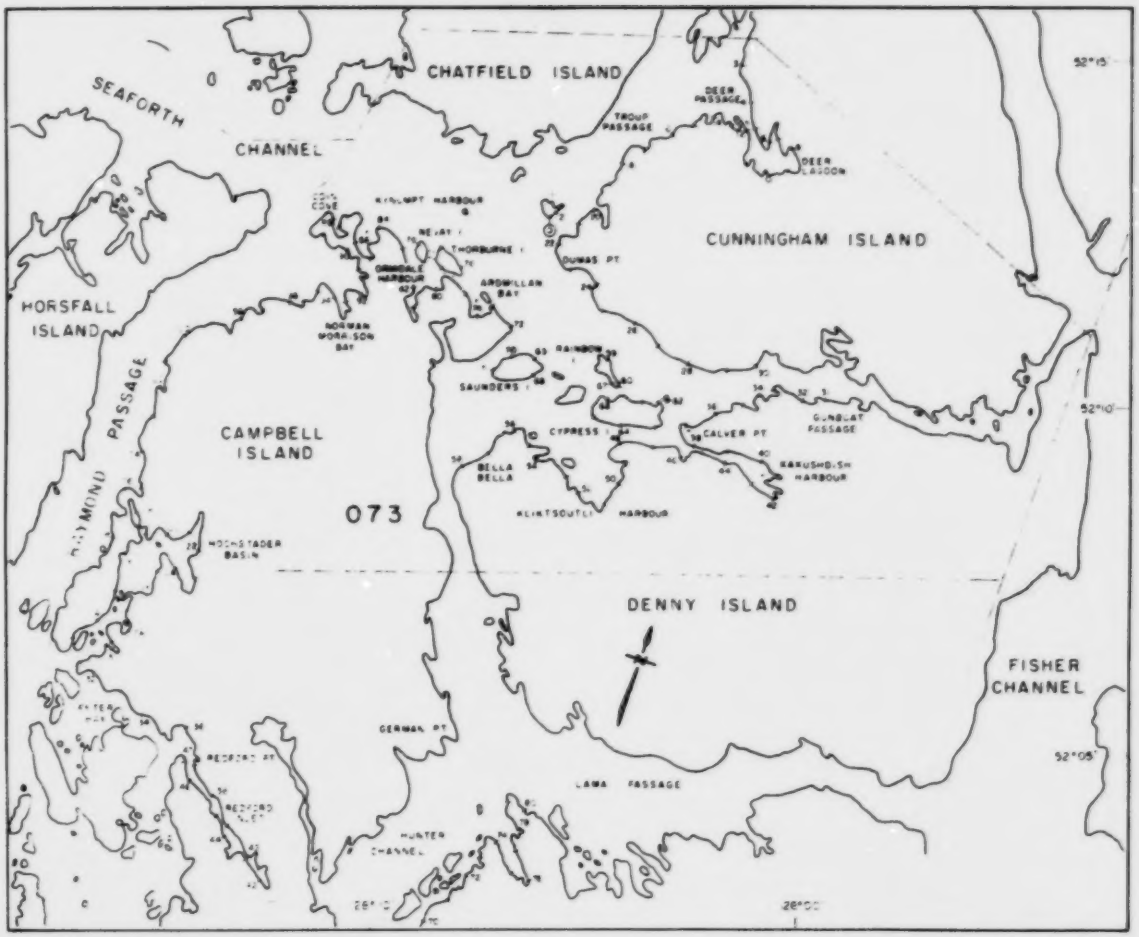


Fig. 073-2. Detailed map of section 073, Gunboat Passage.

Table 073-1. Section 073 - spawn position by year.

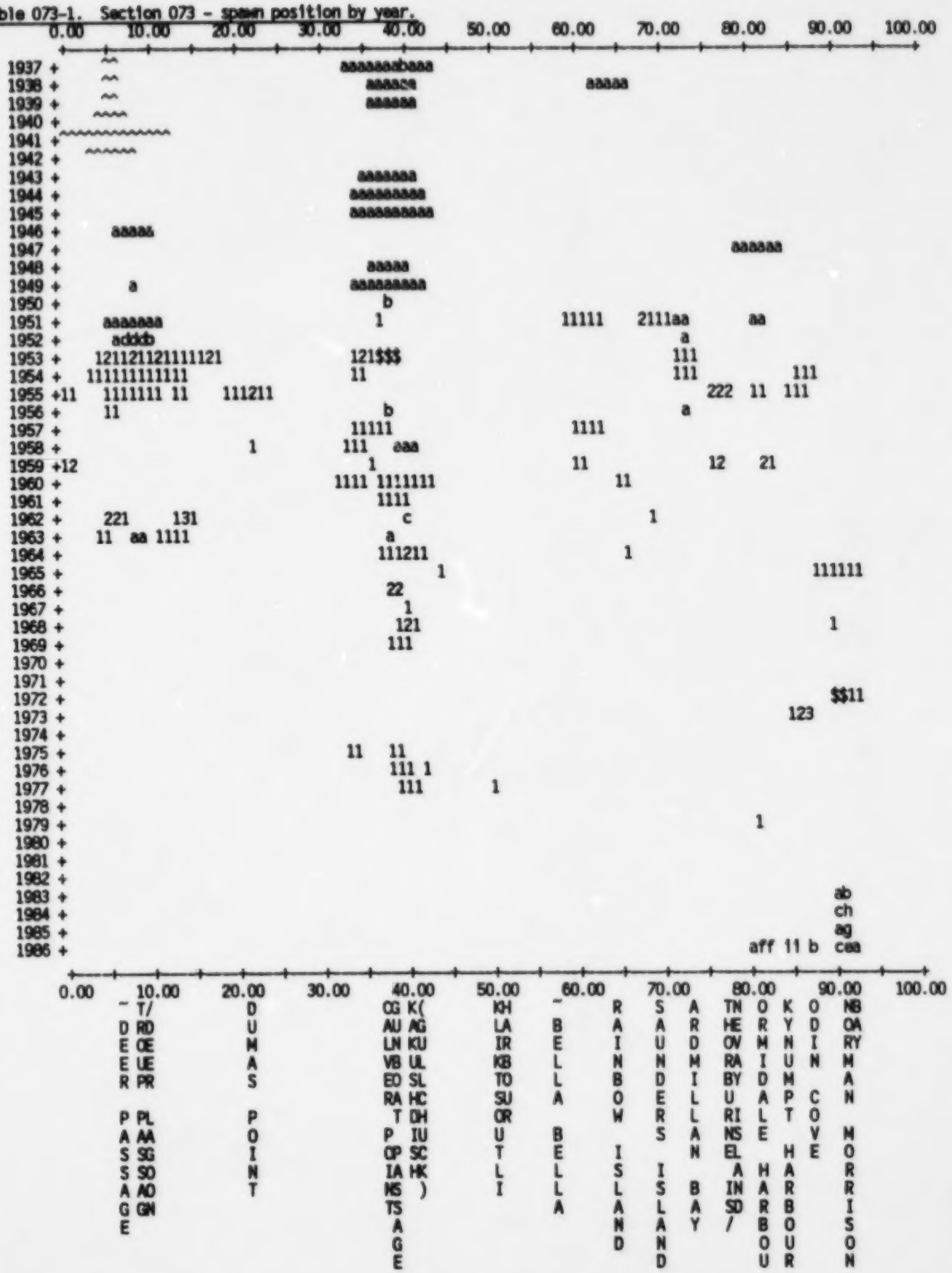


Table 073-1 (cont'd). Section 073 (cont'd) - spawn position by year.

Table 073-2. Section 073 - histogram of cumulative spawn frequency over distance

```
                                position(km)
                                0    5   10   15   20   25   30   35   40   45   50   55   60   65   70   75  vara varb varc  all
                                +----+----+----+----+----+----+----+----+----+----+----+----+----+----+----+
                          0.00 +**|                                                                          2    0    1    3
                          1.00 +***|                                                                         3    0    1    4
                          2.00 +|                                                                           0    0    1    1
                          3.00 +*||                                                                         1    0    2    3
                          4.00 +***|||||                                                                   3    0    5    8
                          5.00 +********0|||||||||                                                        8    1    8   17
DEER PASSAGE +            6.00 +*******000|||||||||                                                       6    3    8   17
                          7.00 +*****00000||||||                                                          4    6    5   15
TROUP PASSAG/DEER LAGOON  8.00 +*****0000000||                                                            4    8    2   14
                          9.00 +****00000000|                                                             3    7    1   11
                         10.00 +****00000|                                                                3    4    1    8
                         11.00 +******0|                                                                  5    1    1    7
                         12.00 +***|                                                                      3    0    1    4
                         13.00 +*****                                                                     5    0    0    5
                         14.00 +*******                                                                   7    0    0    7
                         15.00 +**                                                                        2    0    0    2
                         16.00 +*                                                                         1    0    0    1
                         17.00 +**                                                                        2    0    0    2
                         18.00 +*                                                                         1    0    0    1
                         19.00 +*                                                                         1    0    0    1
                         20.00 +*                                                                         1    0    0    1
DUMAS POINT              21.00 +*                                                                         1    0    0    1
                         22.00 +***                                                                       3    0    0    3
                         23.00 +*                                                                         1    0    0    1
                         24.00 +*                                                                         1    0    0    1
                         25.00 +                                                                          0    0    0    0
                         26.00 +                                                                          0    0    0    0
                         27.00 +                                                                          0    0    0    0
                         28.00 +                                                                          0    0    0    0
                         29.00 +                                                                          0    0    0    0
                         30.00 +                                                                          0    0    0    0
                         31.00 +                                                                          0    0    0    0
                         32.00 +*                                                                         1    0    0    1
                         33.00 +***0                                                                      3    1    0    4
                                +----+----+----+----+----+----+----+----+----+----+----+----+----+----+----+
                                0    5   10   15   20   25   30   35   40   45   50   55   60   65   70   75  vara varb varc  all
```

Table 073-2 (cont'd.)

```
                        position(km)
                        +----+----+----+----+----+----+----+----+----+----+----+----+----+----+----+
                        0    5   10   15   20   25   30   35   40   45   50   55   60   65   70   75  vara varb varc  all
                 34.00 +******0000                                                                      6    4    0   10
                 35.00 +******00000                                                                     6    5    0   11
                 36.00 +***00000000                                                                     3    8    0   11
CALVER POINT     37.00 +******000000000                                                                 6    9    0   15
GUNBOAT PASSAGE  38.00 +**********0000000000000000                                                     10   15    0   25
                 39.00 +**********00000000000                                                          11   11    0   22
KAKUSHDISH (GULLCHUCK) H 40.00 +**********0000000000000                                                10   13    0   23
                 41.00 +****00000000                                                                    4    8    0   12
                 42.00 +***0000                                                                         3    4    0    7
                 43.00 +*00                                                                             1    2    0    3
                 44.00 +*                                                                               1    0    0    1
                 45.00 +                                                                                0    0    0    0
                 46.00 +                                                                                0    0    0    0
                 47.00 +                                                                                0    0    0    0
                 48.00 +                                                                                0    0    0    0
                 49.00 +                                                                                0    0    0    0
KLIKTSOUTLI HARBOUR 50.00 +*                                                                            1    0    0    1
                 51.00 +                                                                                0    0    0    0
                 52.00 +                                                                                0    0    0    0
                 53.00 +                                                                                0    0    0    0
                 54.00 +                                                                                0    0    0    0
                 55.00 +                                                                                0    0    0    0
                 56.00 +                                                                                0    0    0    0
BELLA BELLA      57.00 +                                                                                0    0    0    0
                 58.00 +                                                                                0    0    0    0
                 59.00 +*                                                                               1    0    0    1
                 60.00 +***                                                                             3    0    0    3
                 61.00 +***                                                                             3    0    0    3
                 62.00 +**0                                                                             2    1    0    3
                 63.00 +**0                                                                             2    1    0    3
RAINBOW ISLAND   64.00 +0                                                                               0    1    0    1
                 65.00 +*0                                                                              1    1    0    2
                 66.00 +**0                                                                             2    1    0    3
                 67.00 +                                                                                0    0    0    0
                 68.00 +**                                                                              2    0    0    2
                        +----+----+----+----+----+----+----+----+----+----+----+----+----+----+----+
                        0    5   10   15   20   25   30   35   40   45   50   55   60   65   70   75  vara varb varc  all
```

Table 073-2 (cont'd.)

```
                        position(km)
                        +----+----+----+----+----+----+----+----+----+----+----+----+----+----+----+
                        0    5   10   15   20   25   30   35   40   45   50   55   60   65   70   75  vara varb varc all
                 69.00 +**                                                                            2    0    0    2
SAUNDERS ISLAND  70.00 +*                                                                             1    0    0    1
                 71.00 +*                                                                             1    0    0    1
                 72.00 +**0                                                                           2    1    0    3
ARDMILLAN BAY    73.00 +**000                                                                         2    3    0    5
                 74.00 +**                                                                            2    0    0    2
                 75.00 +                                                                              0    0    0    0
                 76.00 +***                                                                           3    0    0    3
THORBURNE IS/NEVAY ISLAND 77.00 +****                                                                 4    0    0    4
                 78.00 +**                                                                            2    0    0    2
                 79.00 +0                                                                             0    1    0    1
                 80.00 +00                                                                            0    2    0    2
ORMIDALE HARBOUR 81.00 +**00000000                                                                    2    8    0   10
                 82.00 +***00000000                                                                   3    8    0   11
                 83.00 +*0                                                                            1    1    0    2
KYNUMPT HARBOUR  84.00 +0000000000                                                                    0   10    0   10
                 85.00 +**000000000                                                                   2    9    0   11
                 86.00 +****                                                                          4    0    0    4
ODIN COVE        87.00 +*****00                                                                       5    2    0    7
                 88.00 +**                                                                            2    0    0    2
                 89.00 +*                                                                             1    0    0    1
                 90.00 +***000000000                                                                  3    9    0   12
NORMAN MORRISON BAY 91.00 +**00000000000000000000000000                                               2   25    0   27
                 92.00 +**0                                                                           2    1    0    3
                 93.00 +**                                                                            2    0    0    2
                 94.00 +                                                                              0    0    0    0
                 95.00 +                                                                              0    0    0    0
                 96.00 +                                                                              0    0    0    0
                 97.00 +                                                                              0    0    0    0
                 98.00 +                                                                              0    0    0    0
                 99.00 +                                                                              0    0    0    0
                100.00 +                                                                              0    0    0    0
                101.00 +                                                                              0    0    0    0
                102.00 +                                                                              0    0    0    0
                103.00 +                                                                              0    0    0    0
                        +----+----+----+----+----+----+----+----+----+----+----+----+----+----+----+
                        0    5   10   15   20   25   30   35   40   45   50   55   60   65   70   75  vara varb varc all
```

Table 073-2 (cont'd.)

position(km)

		0	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	vara	varb	varc	all
	104.00	+																0	0	0	0
	105.00	+																0	0	0	0
	106.00	+																0	0	0	0
	107.00	+																0	0	0	0
	108.00	+																0	0	0	0
	109.00	+																0	0	0	0
	110.00	+																0	0	0	0
	111.00	+																0	0	0	0
	112.00	+																0	0	0	0
	113.00	+																0	0	0	0
	114.00	+																0	0	0	0
	115.00	+																0	0	0	0
	116.00	+																0	0	0	0
	117.00	+																0	0	0	0
	118.00	+																0	0	0	0
	119.00	+																0	0	0	0
	120.00	+																0	0	0	0
	121.00	+																0	0	0	0
	122.00	+																0	0	0	0
	123.00	+																0	0	0	0
	124.00	+																0	0	0	0
	125.00	+																0	0	0	0
	126.00	+*																1	0	0	1
	127.00	+*00																1	2	0	3
	128.00	+*00000																1	5	0	6
HOCHSTADER BASIN	129.00	+*0000000000																1	10	0	11
	130.00	+**0000000000																2	10	0	12
	131.00	+**00000																2	5	0	7
	132.00	+00																0	2	0	2
	133.00	+																0	0	0	0
	134.00	+																0	0	0	0
	135.00	+																0	0	0	0
	136.00	+*																1	0	0	1
	137.00	+**00																2	2	0	4
PETER BAY	138.00	+**000000																2	6	0	8
		0	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	vara	varb	varc	all

Table 073-2 (cont'd.)

```
                        position(km)
                        +----+----+----+----+----+----+----+----+----+----+----+----+----+----+----+
                        0    5   10   15   20   25   30   35   40   45   50   55   60   65   70   75
                139.00 +                                                                             
                140.00 +                                                                             
REDFORD POIN/REDFORD INLE 141.00 +*00000                                                             
                142.00 +00                                                                           
                143.00 +                                                                             
                144.00 +                                                                             
                145.00 +*                                                                            
                146.00 +*                                                                            
                147.00 +                                                                             
                148.00 +                                                                             
                        +----+----+----+----+----+----+----+----+----+----+----+----+----+----+----+
                        0    5   10   15   20   25   30   35   40   45   50   55   60   65   70   75
```

vara	varb	varc	all
0	0	0	0
0	0	0	0
1	5	0	6
0	2	0	2
0	0	0	0
0	0	0	0
1	0	0	1
1	0	0	1
0	0	0	0
0	0	0	0
vara	varb	varc	all

Table 073-3. Herring statistical spawn summary for section 073.

Year	Total records	Spawn index	Sum length	Av wid	Av int	Av date	SE date	Wt date	Min day	Max day	Ind day	Ind loc
1937	4	96575	11398	0	4.5	78.5	3.93	81.0	69	88	4	4
1938	4	88602	10457	0	8.0	68.3	2.53	71.1	64	74	3	4
1939	2	54524	6435	0	4.0	79.0	4.00	77.0	75	83	2	2
1940	3	47703	5630	0	5.0	74.0	7.09	79.9	65	88	3	2
1941	2	143117	16891	0	7.0	79.5	0.50	79.8	79	80	2	2
1942	3	88289	10420	14	8.3	86.0	5.00	89.2	76	91	2	2
1943	2	66911	7897	13	7.0	77.5	1.50	76.6	76	79	2	2
1944	1	69699	8226	14	7.0	70.0	0.00	70.0	70	70	1	1
1945	2	104548	12339	13	6.0	77.0	0.00	77.0	77	77	1	2
1946	3	93703	11059	6	8.3	91.0	0.00	91.0	91	91	1	3
1947	3	205225	24221	6	6.3	86.3	1.33	85.5	85	89	2	3
1948	2	55761	6581	7	6.0	100.5	8.50	97.2	92	109	2	2
1949	3	77969	9202	6	4.3	88.7	4.48	82.2	80	95	3	3
1950	2	9295	1097	15	4.0	75.0	0.00	75.0	75	75	1	1
1951	8	137466	16224	4	3.8	88.5	0.38	88.4	88	91	3	7
1952	5	94872	11197	4	6.6	90.4	6.40	84.7	84	116	2	2
1953	15	212655	25098	6	5.5	82.1	1.35	82.9	76	88	6	5
1954	4	144049	17001	5	6.0	73.0	0.00	73.0	73	73	1	4
1955	10	178119	21022	6	5.4	84.8	2.18	85.4	77	92	3	7
1956	4	13938	1645	5	5.0	89.0	5.74	90.9	82	106	3	3
1957	3	51109	6032	5	5.0	89.0	0.00	89.0	89	89	1	1
1958	3	40264	4752	5	3.7	86.3	2.33	84.4	84	91	2	3
1959	10	42602	5028	4	4.0	85.7	0.76	86.2	79	87	3	6
1960	5	87509	10328	6	4.2	86.6	2.68	85.3	82	97	4	5
1961	2	31748	3747	4	4.0	76.5	0.50	77.0	76	77	2	2
1962	10	49940	5894	6	5.4	94.7	2.34	92.7	82	102	6	5
1963	5	39493	4661	4	5.8	90.4	4.38	90.7	75	101	5	3
1964	5	47627	5621	5	4.2	86.6	4.04	81.4	78	96	3	4
1965	3	38874	4588	4	3.7	95.3	4.67	99.9	86	100	2	2
1966	5	17039	2011	42	4.6	98.0	7.79	89.1	79	112	3	3
1967	4	5999	708	9	2.5	97.5	6.76	90.3	79	109	4	3
1968	7	26715	3153	5	4.4	88.0	5.02	86.9	75	105	5	3
1969	2	13167	1554	9	2.0	93.0	11.00	85.9	82	104	2	2
1970	0	0	0	0	0.0	0.0	0.00	0.0	0	0	0	0
1971	0	0	0	0	0.0	0.0	0.00	0.0	0	0	0	0
1972	6	16268	1920	2	1.0	112.0	2.25	111.8	107	118	4	1
1973	4	13167	1554	33	3.5	99.5	0.50	99.8	99	101	2	2
1974	0	0	0	0	0.0	0.0	0.00	0.0	0	0	0	0
1975	2	20386	2406	5	3.0	91.0	0.00	91.0	91	91	1	2
1976	3	3482	411	3	3.0	90.0	0.00	90.0	90	90	1	1
1977	2	20911	2468	7	4.0	90.0	3.00	89.0	87	93	2	2
1978	0	0	0	0	0.0	0.0	0.00	0.0	0	0	0	0
1979	1	1237	146	23	3.0	94.0	0.00	94.0	94	94	1	1
1980	0	0	0	0	0.0	0.0	0.00	0.0	0	0	0	0
1981	0	0	0	0	0.0	0.0	0.00	0.0	0	0	0	0
1982	0	0	0	0	0.0	0.0	0.00	0.0	0	0	0	0
1983	2	5118	604	7	0.0	84.0	0.00	84.0	84	84	1	1
1984	8	27241	3215	8	0.0	94.0	0.00	94.0	94	94	1	1
1985	7	11184	1320	7	0.0	95.0	0.00	95.0	95	95	1	1
1986	22	130433	15394	12	0.0	94.6	0.89	96.1	90	100	5	4
All	203	2724536	321555	8	4.8	88.8	0.72	84.3	64	118	44	23

Table 073-4. Spawn summary for section 073 from 1937 to 1986.

A. GENERAL:

There are four major spawning areas in this section:
(i) Deer Lagoon
(ii) Gunboat Passage
(iii) Ormidale Harbour and
(iv) Hochstader Basin

B. COMPLETENESS OF RECORDS:

The 50 year record should be reasonably complete considering proximity to Bella Bella, New Bella Bella and Shearwater (Kliktsoatli Harbour).

C. SPAWNING CONSISTENCY OVER TIME: CONSTANT

If pooled among all localities, there has been a nearly constant annual record of spawnings since 1937 except for the years, 1970-71, 1974, 1978 and 1980-82.

D. MAGNITUDE OF SPAWNINGS: MEDIUM

1. NUMBER OF SPAWN YEARS/50 YEARS	= 43/50 (1937-86)
2. NUMBER OF SPAWN YEARS/DOCUMENTED YEARS	= 43/50 (1937-86)
3. CUMULATIVE SPAWN LENGTH	= 321.6 Km.
4. CUMULATIVE SPAWN AREA	= 272.5 ha.

E. SPAWNING TIME:

1. MEAN UNWEIGHTED DATE (DOY)	= March 30 (88.8)
2. MEAN WEIGHTED DATE (DOY)	= March 25 (84.3)

F. COMMENTS:

Sections 072, 073 and 074 represent a complex cluster of spawns with continuous records since the mid-1930's. Each of the 3 sections is geographically small with nearly identical mean spawning times (March 28, 30 and 29 for 072, 073 and 074 respectively). These locations are part of the same stock but it is not clear if this group is distinct from adjacent spawning areas either to the north or the south.

G. ROE FISHERIES:

No major roe fisheries are documented.

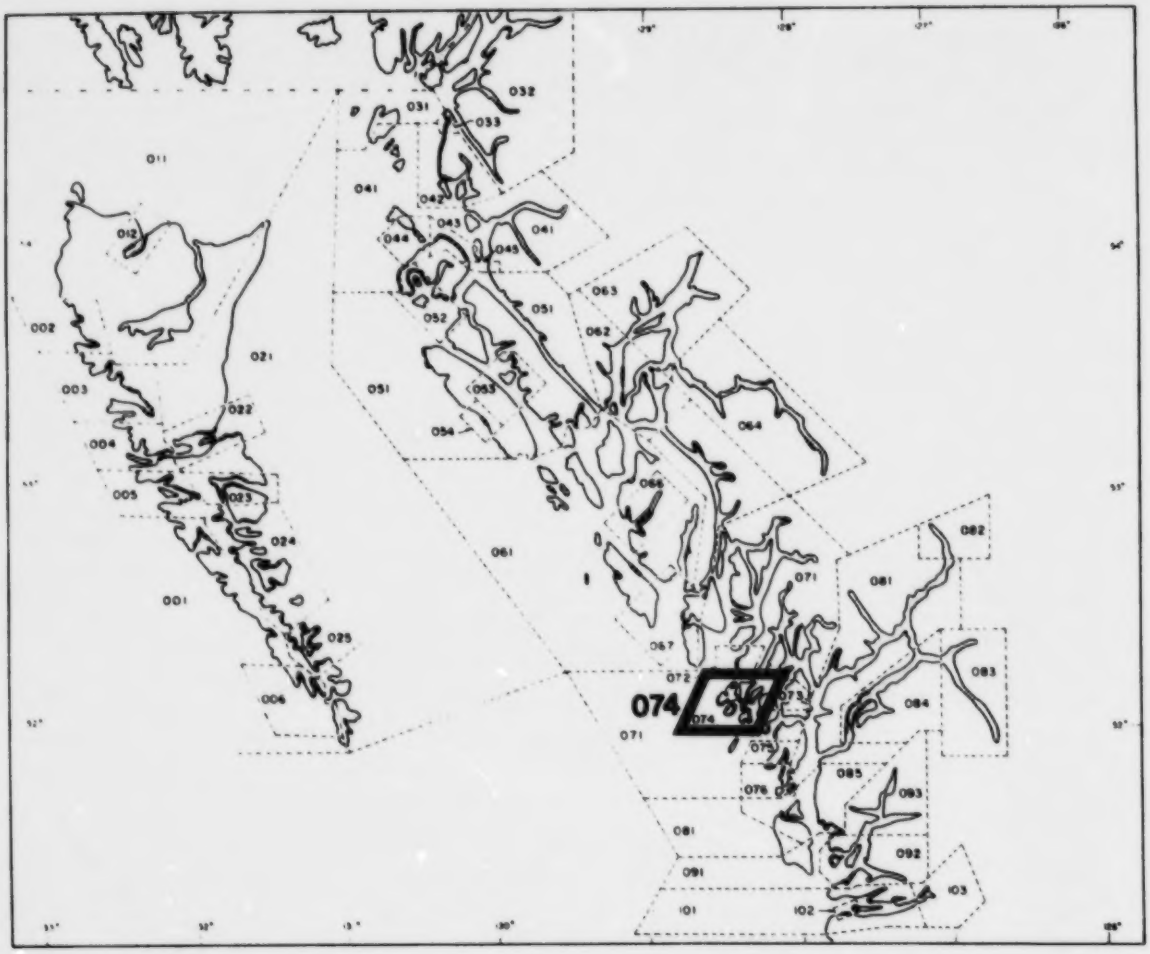


Fig. 074-1. Overview map showing location of section 074, Thompson Bay.

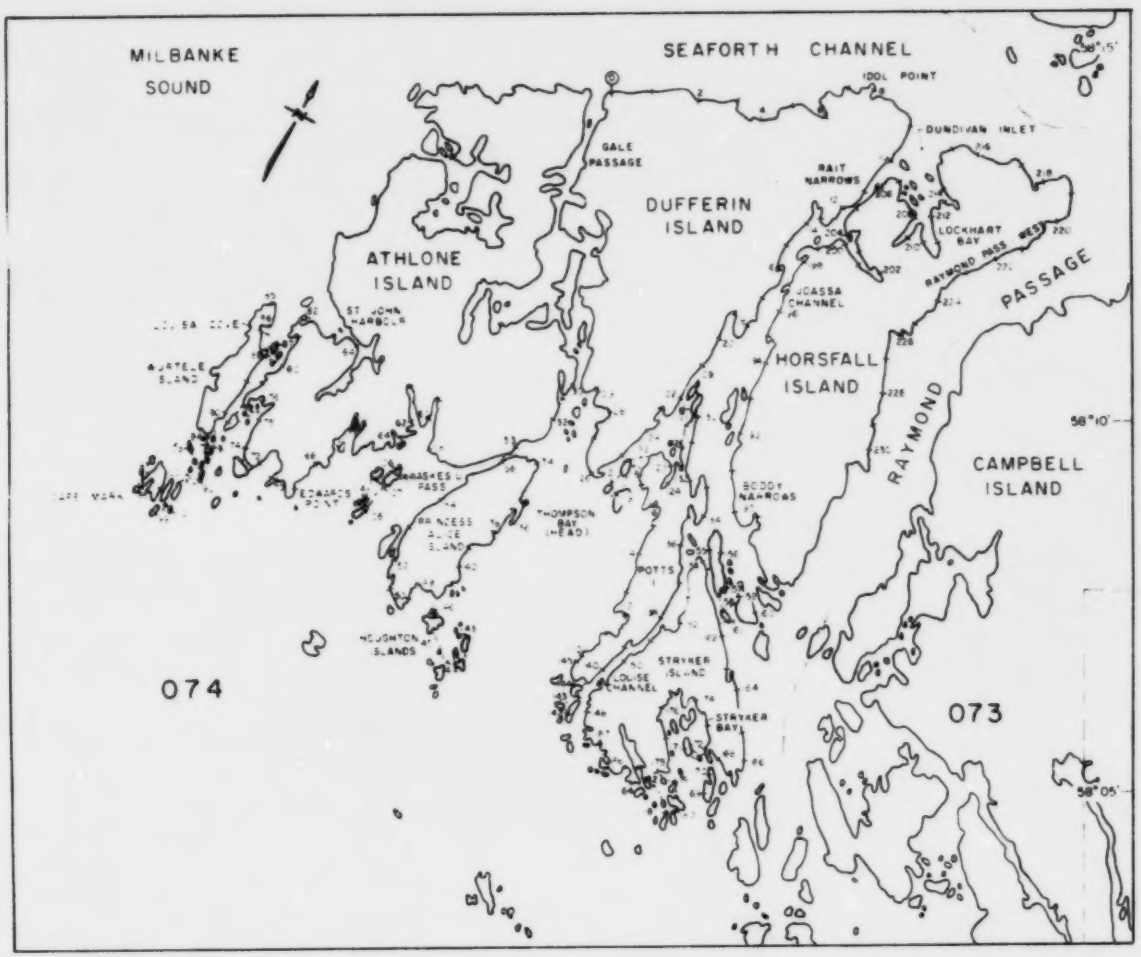


Fig. 074-2. Detailed map of section 074, Thompson Bay.

Table 074-1. Section 074 - spawn position by year.

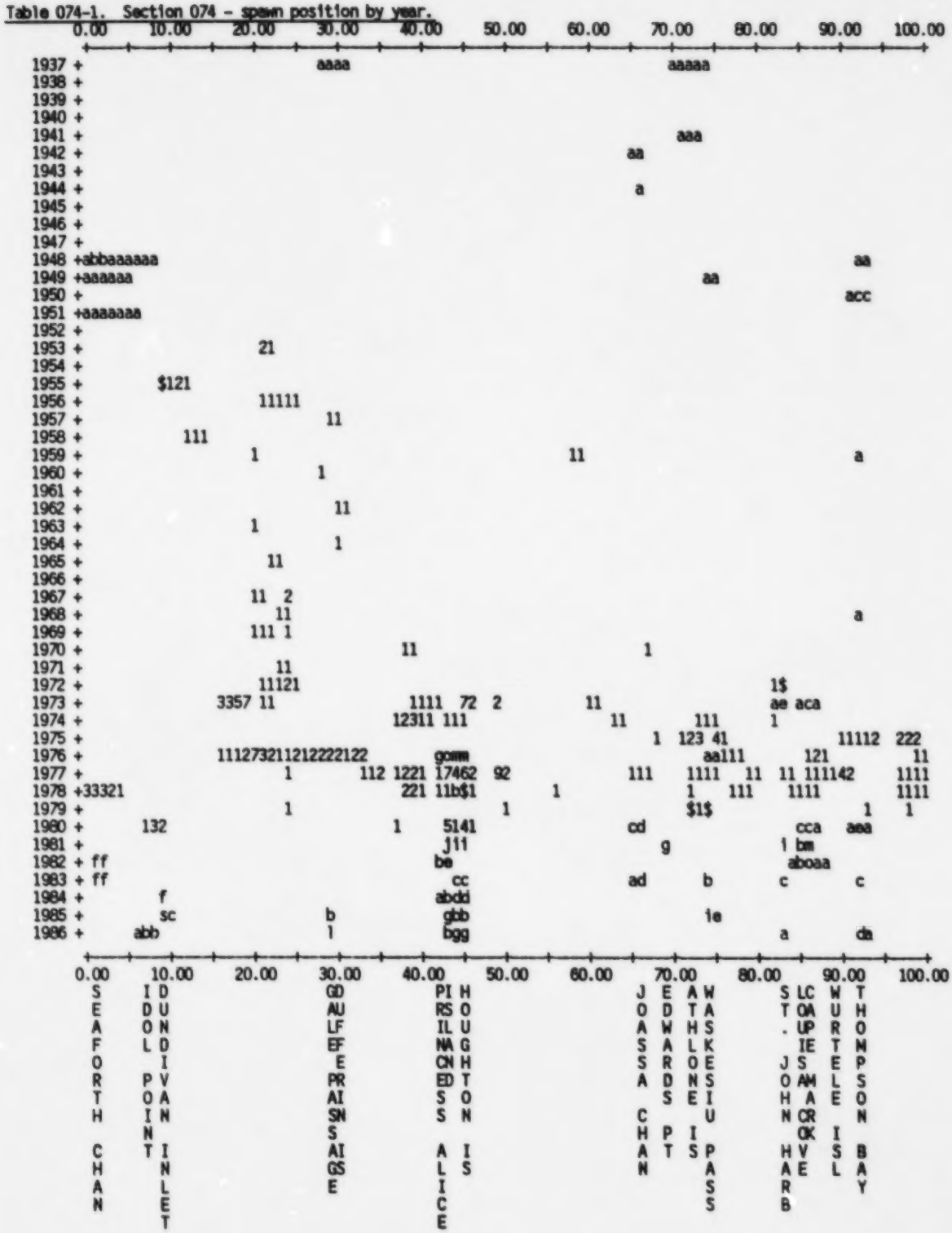


Table 074-1 (cont'd). Section 074 (cont'd) - spawn position by year.

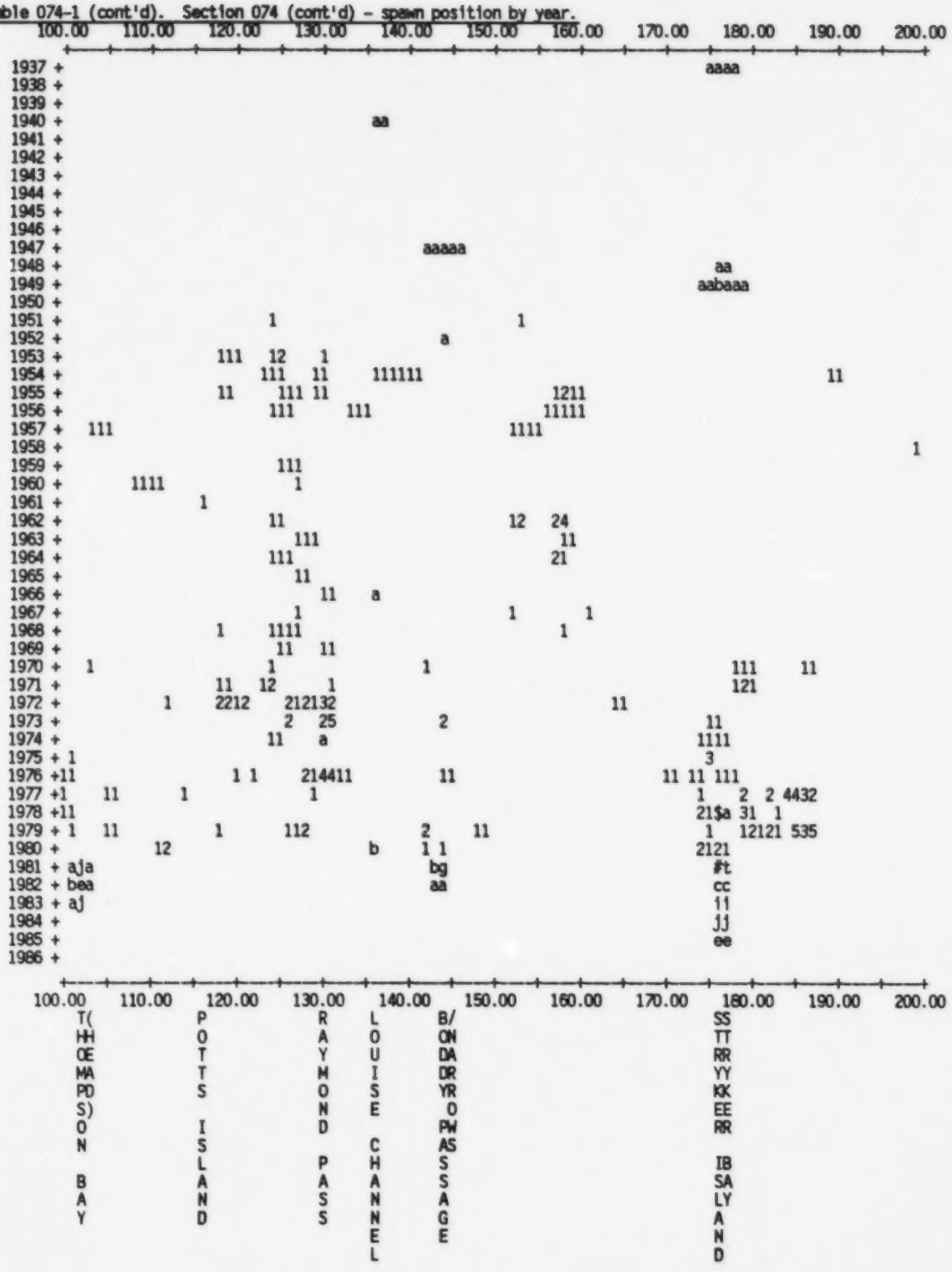


Table 074-1 (cont'd). Section 074 (cont'd) - spawn position by year.

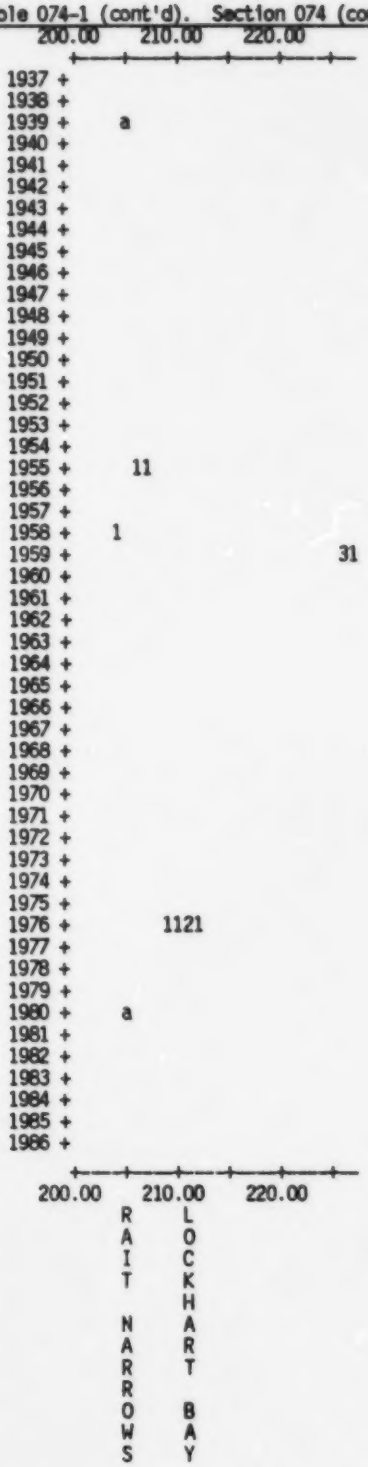
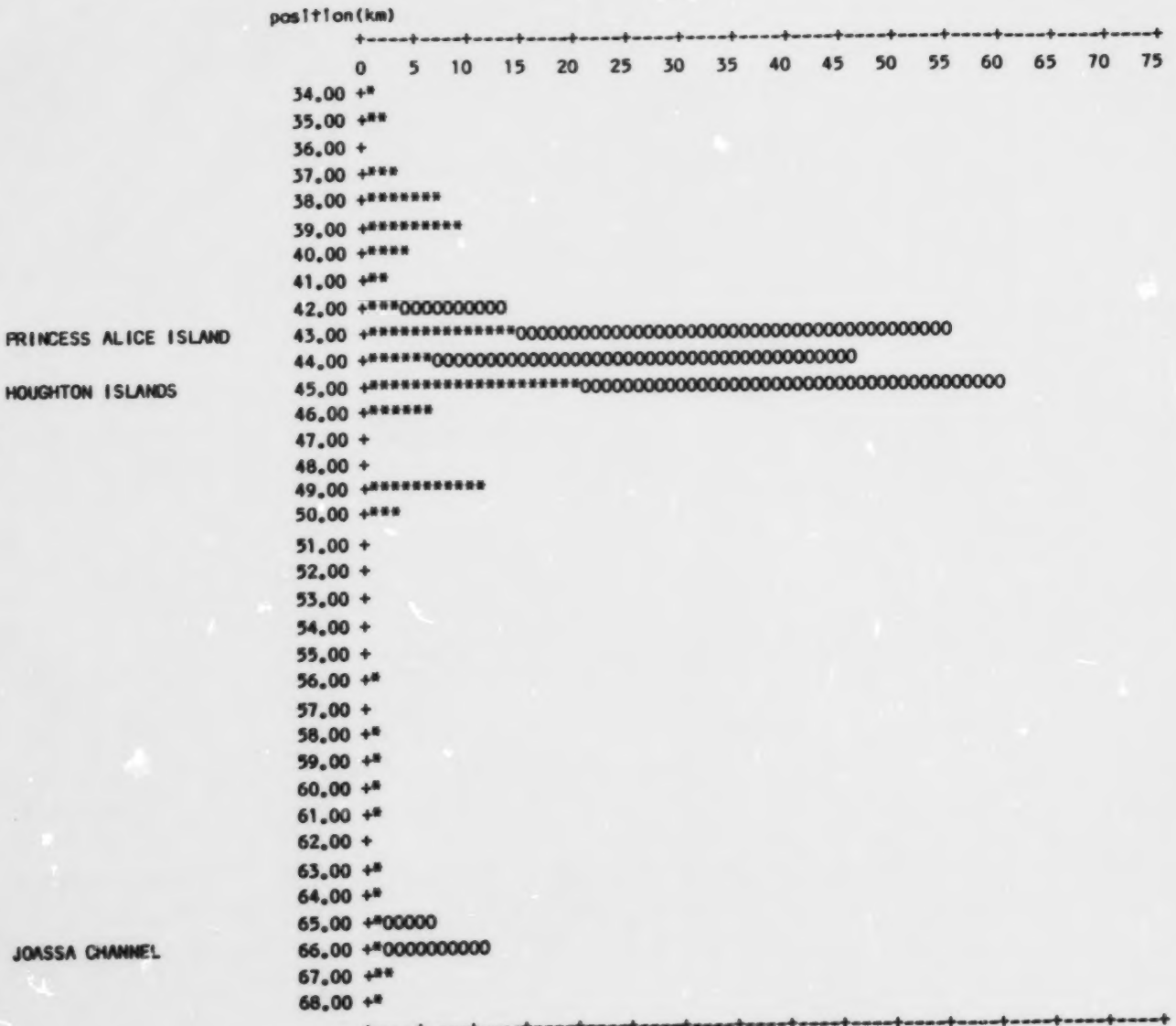


Table 074-2. Section 074 - histogram of cumulative spawn frequency over distance

```
                    position(km)
                          0    5   10   15   20   25   30   35   40   45   50   55   60   65   70   75  vara varb varc  all
                          +----+----+----+----+----+----+----+----+----+----+----+----+----+----+----+----+
                     0.00 +***000                                                                        3    3    0    6
SEAFORTH CHANNEL     1.00 +***0000000000000000                                                           3   16    0   19
                     2.00 +***0000000000000000                                                           3   16    0   19
                     3.00 +**000                                                                         2    3    0    5
                     4.00 +*000                                                                          1    3    0    4
                     5.00 +000                                                                           0    3    0    3
                     6.00 +000                                                                           0    3    0    3
IDOL POINT           7.00 +*000                                                                          1    3    0    4
                     8.00 +***000                                                                        3    3    0    6
DUNDIVAN INLET       9.00 +****00000000000000000000000000000                                             4   26    0   30
                    10.00 +*000                                                                          1    3    0    4
                    11.00 +**                                                                            2    0    0    2
                    12.00 +**                                                                            2    0    0    2
                    13.00 +*                                                                             1    0    0    1
                    14.00 +*                                                                             1    0    0    1
                    15.00 +                                                                              0    0    0    0
                    16.00 +****                                                                          4    0    0    4
                    17.00 +****                                                                          4    0    0    4
                    18.00 +******                                                                        6    0    0    6
                    19.00 +*********                                                                     9    0    0    9
                    20.00 +***********                                                                  11    0    0   11
                    21.00 +**********                                                                   10    0    0   10
                    22.00 +********                                                                      8    0    0    8
                    23.00 +******                                                                        6    0    0    6
                    24.00 +***********                                                                  11    0    0   11
                    25.00 +****                                                                          4    0    0    4
                    26.00 +*                                                                             1    0    0    1
                    27.00 +**                                                                            2    0    0    2
                    28.00 +***0                                                                          3    1    0    4
GALE PASSAGE        29.00 +***000000000000000                                                            3   15    0   18
DUFFERIN ISLAND     30.00 +*****0                                                                        5    1    0    6
                    31.00 +**0                                                                           2    1    0    3
                    32.00 +**                                                                            2    0    0    2
                    33.00 +***                                                                           3    0    0    3
                          +----+----+----+----+----+----+----+----+----+----+----+----+----+----+----+----+
                          0    5   10   15   20   25   30   35   40   45   50   55   60   65   70   75  vara varb varc  all
```

Table 074-2 (cont'd.)

position(km)



	vara	varb	varc	all
34.00	1	0	0	1
35.00	2	0	0	2
36.00	0	0	0	0
37.00	3	0	0	3
38.00	7	0	0	7
39.00	9	0	0	9
40.00	4	0	0	4
41.00	2	0	0	2
42.00	3	10	0	13
43.00	14	41	0	55
44.00	6	40	0	46
45.00	20	40	0	60
46.00	6	0	0	6
47.00	0	0	0	0
48.00	0	0	0	0
49.00	11	0	0	11
50.00	3	0	0	3
51.00	0	0	0	0
52.00	0	0	0	0
53.00	0	0	0	0
54.00	0	0	0	0
55.00	0	0	0	0
56.00	1	0	0	1
57.00	0	0	0	0
58.00	1	0	0	1
59.00	1	0	0	1
60.00	1	0	0	1
61.00	1	0	0	1
62.00	0	0	0	0
63.00	1	0	0	1
64.00	1	0	0	1
65.00	1	5	0	6
66.00	1	10	0	11
67.00	2	0	0	2
68.00	1	0	0	1
	vara	varb	varc	all

Table 074-2 (cont'd.)

	position(km)	vara	varb	varc	all
	0 5 10 15 20 25 30 35 40 45 50 55 60 65 70 75				
EDWARDS POINT	69.00 +0000000	0	7	0	7
	70.00 +0	0	1	0	1
	71.00 +*00	1	2	0	3
ATHLONE ISLAND	72.00 +*****000	5	3	0	8
	73.00 +******00	6	2	0	8
WASKESIU PASS	74.00 +***0000000000000000	3	15	0	18
	75.00 +******0000000	6	7	0	13
	76.00 +**	2	0	0	2
	77.00 +**	2	0	0	2
	78.00 +**	2	0	0	2
	79.00 +**	2	0	0	2
	80.00 +*	1	0	0	1
	81.00 +	0	0	0	0
	82.00 +**0	2	1	0	3
ST. JOHN HARBOUR	83.00 +**0000000000000000000	2	19	0	21
	84.00 +**0	2	1	0	3
LOUISA COVE	85.00 +*00000000	1	8	0	9
CAPE MARK	86.00 +***00000000000000000000000000000000000	3	34	0	37
	87.00 +****000	4	3	0	7
	88.00 +**0	2	1	0	3
WURTELE ISLAND	89.00 +*	1	0	0	1
	90.00 +*****	5	0	0	5
	91.00 +***00	3	2	0	5
THOMPSON BAY	92.00 +*000000000000000000	1	18	0	19
	93.00 +**000000	2	6	0	8
	94.00 +**	2	0	0	2
	95.00 +	0	0	0	0
	96.00 +	0	0	0	0
	97.00 +****	4	0	0	4
	98.00 +*****	5	0	0	5
	99.00 +*****	5	0	0	5
	100.00 +***	3	0	0	3
	101.00 +****0000	4	4	0	8
THOMPSON BAY (HEAD)	102.00 +000000000000000000000000	0	25	0	25
	103.00 +**00	2	2	0	4
	0 5 10 15 20 25 30 35 40 45 50 55 60 65 70 75	vara	varb	varc	all

Table 074-2 (cont'd.)

position(km)

		0	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	vara	varb	varc	all
	104.00	+*																1	0	0	1
	105.00	+***																3	0	0	3
	106.00	+**																2	0	0	2
	107.00	+																0	0	0	0
	108.00	+*																1	0	0	1
	109.00	+*																1	0	0	1
	110.00	+*																1	0	0	1
	111.00	+**																2	0	0	2
	112.00	+***																3	0	0	3
	113.00	+																0	0	0	0
	114.00	+*																1	0	0	1
	115.00	+																0	0	0	0
POTTS ISLAND	116.00	+*																1	0	0	1
	117.00	+																0	0	0	0
	118.00	+*******																7	0	0	7
	119.00	+*****																5	0	0	5
	120.00	+***																3	0	0	3
	121.00	+**																2	0	0	2
	122.00	+*																1	0	0	1
	123.00	+**																2	0	0	2
	124.00	+**********																11	0	0	11
	125.00	+**********																11	0	0	11
	126.00	+**********																11	0	0	11
	127.00	+*********																9	0	0	9
	128.00	+********																8	0	0	8
	129.00	+******																6	0	0	6
RAYMOND PASS	130.00	+**********0																14	1	0	15
	131.00	+**********																14	0	0	14
	132.00	+*																1	0	0	1
	133.00	+**																2	0	0	2
	134.00	+*																1	0	0	1
	135.00	+*																1	0	0	1
LOUISE CHANNEL	136.00	+*0000																1	4	0	5
	137.00	+*0																1	1	0	2
			0	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	vara	varb	varc	all

Table 074-2 (cont'd.)

position(km)

	0 5 10 15 20 25 30 35 40 45 50 55 60 65 70 75	vara	varb	varc	all
138.00	+*	1	0	0	1
139.00	+*	1	0	0	1
140.00	+*	1	0	0	1
141.00	+*	1	0	0	1
142.00	+****0	4	1	0	5
143.00	+0000	0	4	0	4
BODDY PASSAGE/NARROWS 144.00	+****0000000000	4	10	0	14
145.00	+*0	1	1	0	2
146.00	+0	0	1	0	1
147.00	+	0	0	0	0
148.00	+*	1	0	0	1
149.00	+*	1	0	0	1
150.00	+	0	0	0	0
151.00	+	0	0	0	0
152.00	+***	3	0	0	3
153.00	+****	4	0	0	4
154.00	+*	1	0	0	1
155.00	+*	1	0	0	1
156.00	+*	1	0	0	1
157.00	+******	6	0	0	6
158.00	+**********	10	0	0	10
159.00	+***	3	0	0	3
160.00	+**	2	0	0	2
161.00	+*	1	0	0	1
162.00	+	0	0	0	0
163.00	+	0	0	0	0
164.00	+*	1	0	0	1
165.00	+*	1	0	0	1
166.00	+	0	0	0	0
167.00	+	0	0	0	0
168.00	+	0	0	0	0
169.00	+	0	0	0	0
170.00	+*	1	0	0	1
171.00	+*	1	0	0	1
172.00	+	0	0	0	0
	0 5 10 15 20 25 30 35 40 45 50 55 60 65 70 75	vara	varb	varc	all

Table 074-2 (cont'd.)

position(km)

	0 5 10 15 20 25 30 35 40 45 50 55 60 65 70 75	vara	varh	varc	all
173.00	+*	1	0	0	1
174.00	+*******0	7	1	0	8
175.00	+*********00	8	2	0	10
176.00	+*******0000000000000000000000000000000000000000000000000000000000000000000000000000	6	63	0	69
STRYKER ISLAND					
STRYKER BAY					
177.00	+***0000000000000000000000000000000000000000000000000000000000000000	3	51	0	54
178.00	+***00	3	2	0	5
179.00	+**********0	9	1	0	10
180.00	+*****	5	0	0	5
181.00	+*	1	0	0	1
182.00	+****	4	0	0	4
183.00	+**	2	0	0	2
184.00	+****	4	0	0	4
185.00	+**********	9	0	0	9
186.00	+********	7	0	0	7
187.00	+*********	8	0	0	8
188.00	+	0	0	0	0
189.00	+*	1	0	0	1
190.00	+*	1	0	0	1
191.00	+	0	0	0	0
192.00	+	0	0	0	0
193.00	+	0	0	0	0
194.00	+	0	0	0	0
195.00	+	0	0	0	0
196.00	+	0	0	0	0
197.00	+	0	0	0	0
198.00	+	0	0	0	0
199.00	+*	1	0	0	1
200.00	+	0	0	0	0
201.00	+	0	0	0	0
202.00	+	0	0	0	0
203.00	+	0	0	0	0
204.00	+*	1	0	0	1
205.00	+00	0	2	0	2
RAIT NARROWS					
206.00	+*	1	0	0	1
207.00	+*	1	0	0	1
	0 5 10 15 20 25 30 35 40 45 50 55 60 65 70 75	vara	varh	varc	all

Table 074-2 (cont'd.)

LOCKHART BAY

position(km)

	0 5 10 15 20 25 30 35 40 45 50 55 60 65 70 75	vara	varh	varc	all
208.00	+	0	0	0	0
209.00	+*	1	0	0	1
210.00	+*	1	0	0	1
211.00	+**	2	0	0	2
212.00	+*	1	0	0	1
213.00	+	0	0	0	0
214.00	+	0	0	0	0
215.00	+	0	0	0	0
216.00	+	0	0	0	0
217.00	+	0	0	0	0
218.00	+	0	0	0	0
219.00	+	0	0	0	0
220.00	+	0	0	0	0
221.00	+	0	0	0	0
222.00	+	0	0	0	0
223.00	+	0	0	0	0
224.00	+	0	0	0	0
225.00	+	0	0	0	0
226.00	+***	3	0	0	3
227.00	+*	1	0	0	1
228.00	+*	1	0	0	1
229.00	+	0	0	0	0
	0 5 10 15 20 25 30 35 40 45 50 55 60 65 70 75	vara	varh	varc	all

Table 074-3. Herring statistical spawn summary for section 074.

Year	Total records	Spawn index	Sum length	Av wid	Av int	Av date	SE date	Wt date	Min day	Max day	Ind day	Ind loc
1937	3	147496	9651	0	7.7	88.0	0.00	84.7	88	88	1	3
1938	0	0	0	0	0.0	0.0	0.00	0.0	0	0	0	0
1939	1	3072	201	0	3.0	87.0	0.00	87.0	87	87	1	1
1940	1	12288	804	0	7.0	0.0	0.00	76.0	0	0	0	1
1941	1	24590	1609	0	9.0	81.0	0.00	81.0	81	81	1	1
1942	1	12288	804	5	7.0	92.0	0.00	92.0	92	92	1	1
1943	0	0	0	0	0.0	0.0	0.00	0.0	0	0	0	0
1944	1	6144	402	9	7.0	87.0	0.00	87.0	87	87	1	1
1945	0	0	0	0	0.0	0.0	0.00	0.0	0	0	0	0
1946	0	0	0	0	0.0	0.0	0.00	0.0	0	0	0	0
1947	1	55875	3656	6	3.0	79.0	0.00	79.0	79	79	1	1
1948	4	164827	10785	7	5.5	87.3	2.93	91.1	80	92	3	3
1949	4	172316	11275	6	5.0	81.0	2.12	80.1	78	87	3	3
1950	3	62859	4113	8	5.7	73.0	0.00	73.0	73	73	1	1
1951	3	107562	7038	4	5.0	79.0	5.00	88.0	74	89	2	3
1952	1	4188	274	3	3.0	96.0	0.00	96.0	96	96	1	1
1953	6	78845	5159	6	5.3	83.7	1.48	85.0	79	86	2	1
1954	4	146671	9597	5	6.0	88.3	2.75	89.4	80	91	2	3
1955	11	171842	11244	5	5.0	86.0	1.68	87.1	77	91	4	4
1956	4	191358	12521	5	6.0	85.0	0.00	85.0	85	85	1	1
1957	3	90796	5941	5	4.3	74.0	0.00	74.0	74	74	1	1
1958	3	36312	2376	5	4.7	85.3	3.33	82.4	82	92	2	2
1959	7	79609	5209	4	3.9	82.4	1.69	82.4	77	86	3	3
1960	3	57968	3793	18	3.7	86.7	8.09	85.9	73	101	3	3
1961	1	4188	274	3	5.0	71.0	0.00	71.0	71	71	1	1
1962	9	60291	3945	11	5.4	80.0	3.95	86.2	63	93	6	4
1963	4	62859	4113	3	5.0	67.0	0.00	67.0	67	67	1	2
1964	4	50709	3318	7	4.5	73.3	8.84	61.3	50	87	3	3
1965	2	27937	1828	15	4.0	97.0	1.00	97.5	96	98	2	1
1966	3	12578	823	9	3.0	82.7	8.67	79.8	74	100	2	2
1967	6	24438	1599	7	3.2	80.2	5.59	84.9	57	91	4	4
1968	6	74719	4889	7	4.3	88.2	2.55	88.8	76	92	4	2
1969	5	52390	3428	12	3.8	83.2	0.20	83.2	83	84	2	2
1970	8	62859	4113	18	4.3	75.5	1.91	76.6	69	80	3	5
1971	7	73328	4798	17	3.6	100.9	6.81	94.5	75	116	4	3
1972	21	164155	10741	9	3.4	87.6	0.83	85.6	72	91	5	3
1973	45	282522	18486	19	3.8	86.0	1.18	83.2	71	102	8	10
1974	12	174868	11442	6	3.9	79.8	2.17	77.6	63	87	7	8
1975	27	68208	4463	36	3.4	89.7	1.73	87.2	66	94	3	2
1976	72	683823	44744	11	4.2	101.4	0.24	101.3	90	104	6	10
1977	70	357240	23375	14	4.1	90.7	0.38	92.7	84	96	12	9
1978	36	223621	14632	15	3.1	87.8	1.25	89.2	66	103	12	8
1979	38	124740	8162	20	3.1	87.3	1.16	86.7	67	100	16	6
1980	38	256327	16772	41	4.2	91.1	1.30	94.4	69	101	15	11
1981	96	440655	28833	26	0.0	82.6	0.78	84.1	64	102	21	8
1982	35	309878	20276	31	0.0	82.6	0.68	82.5	79	94	4	6
1983	40	239806	15691	23	0.0	84.7	0.70	84.7	66	90	10	8
1984	28	185138	12114	22	0.0	90.2	0.94	89.9	69	94	10	5
1985	57	239103	15645	26	0.0	91.1	0.50	92.4	83	97	11	7
1986	34	148322	9705	25	0.0	100.5	0.71	100.6	90	106	7	8
All	769	6031604	394661	20	4.0	88.4	0.33	87.8	50	116	45	28

Table 074-4. Spawn summary for section 074 from 1937 to 1986.

A. GENERAL:

There are six major spawning areas in this section:

(i) Dundivan Inlet-Joassa Channel
(ii) Raymond Pass
(iii) Boddy Narrows
(iv) Stryker Bay
(v) Waskesiu Pass and
(vi) Cape Mark-St. John Harbour

B. COMPLETENESS OF RECORDS:

Probably all spawnings prior to 1947 are incomplete.

C. SPAWNING CONSISTENCY OVER TIME: CONSTANT

If pooled among all localities, there has been a constant annual record of spawnings since 1947.

D. MAGNITUDE OF SPAWNINGS: LARGE

1. NUMBER OF SPAWN YEARS/50 YEARS	= 46/50 (1937-86)
2. NUMBER OF SPAWN YEARS/DOCUMENTED YEARS	= 40/40 (1947-86)
3. CUMULATIVE SPAWN LENGTH	= 394.7 Km.
4. CUMULATIVE SPAWN AREA	= 603.2 ha.

E. SPAWNING TIME:

1. MEAN UNWEIGHTED DATE (DOY)	= March 29 (88.4)
2. MEAN WEIGHTED DATE (DOY)	= March 29 (87.8)

F. COMMENTS:

Sections 072, 073 and 074 represent a complex cluster of spawns with continuous records since the mid-1930's. Each of the 3 sections is geographically small with nearly identical mean spawning times (March 28, 30 and 29 for 072, 073 and 074 respectively). These locations are part of the same stock but it is not clear if this group is distinct from adjacent spawning areas either to the north or the south.

G. ROE FISHERIES:

1. NUMBER OF SEINE FISHERY YEARS/15 YEARS	= 9/15 (1972-86)
2. NUMBER OF GILLNET FISHERY YEARS/15 YEARS	= 12/15 (1972-86)
3. MEAN SEINE CATCH/YEAR	= 2243 tons
4. MEAN GILLNET CATCH/YEAR	= 1401 tons

Table 074-5. History of roe fishery catches by gear type in Thompson Bay.

SECT. 074	SEINE NET ROE FISHERIES				GILLNET ROE FISHERIES			
YEAR	DATE OPEN (D/Mo)	TIME OPEN (hrs)	HAILED CATCH (Tons)	FISHING AREA	DATE OPEN (D/Mo)	TIME OPEN (hrs)	HAILED CATCH (Tons)	FISHING AREA
1972	04/03-25/03	480	3022	Thompson & Stryker Bays Boddy Pass	-	-	-	-
1973	07/03-23/03	384	(6150)	Thompson Bay & sect. 76	07/03-23/03	384	(1200)	Thompson Bay & sect. 76
1974	17/03-22/03	120	2600	Thompson Bay & Dundivan	06/03-22/03	384	(3400)	Thompson Bay & sect. 76
1975	23/03-27/03	96	1312	Thompson Bay	02/03-01/04	720	(3539)	all area 7
1976	23/03 & 28/03	6.0 7.0	450 754	Boddy Pass Dundivan Inlet	14/03-29/03	264	2045	Cape Mark
1977	20/03	3.5	2483	Thompson Bay	06/03-25/03	360	(5000)	Cape Mark & sect. 72
1978	22/03	2.0	2500	Thompson Bay	05/03-25/03	384	(8040)	all area 7
1979	-	-	-	-	-	-	-	-
1980	-	-	-	-	-	-	-	-
1981	-	-	-	-	22/03-23/03	16	307	Cape Mark
1982	15/03	0.8	2625	Stryker Bay	18/03-19/03 & 21/03	26	3768	Cape Mark, Thompson & Stryker Bays
1983	15/03	0.3	2200	Thompson Bay	23/03	3	1500	Thompson & Stryker Bays
1984	-	-	-	-	27/03	45	612	Thompson Bay
1985	-	-	-	-	31/03 & 01/04	17	(2262)	sect. 74, 67, 71, 72 & 85
1986	-	-	-	-	05/04	9	172	Thompson Bay

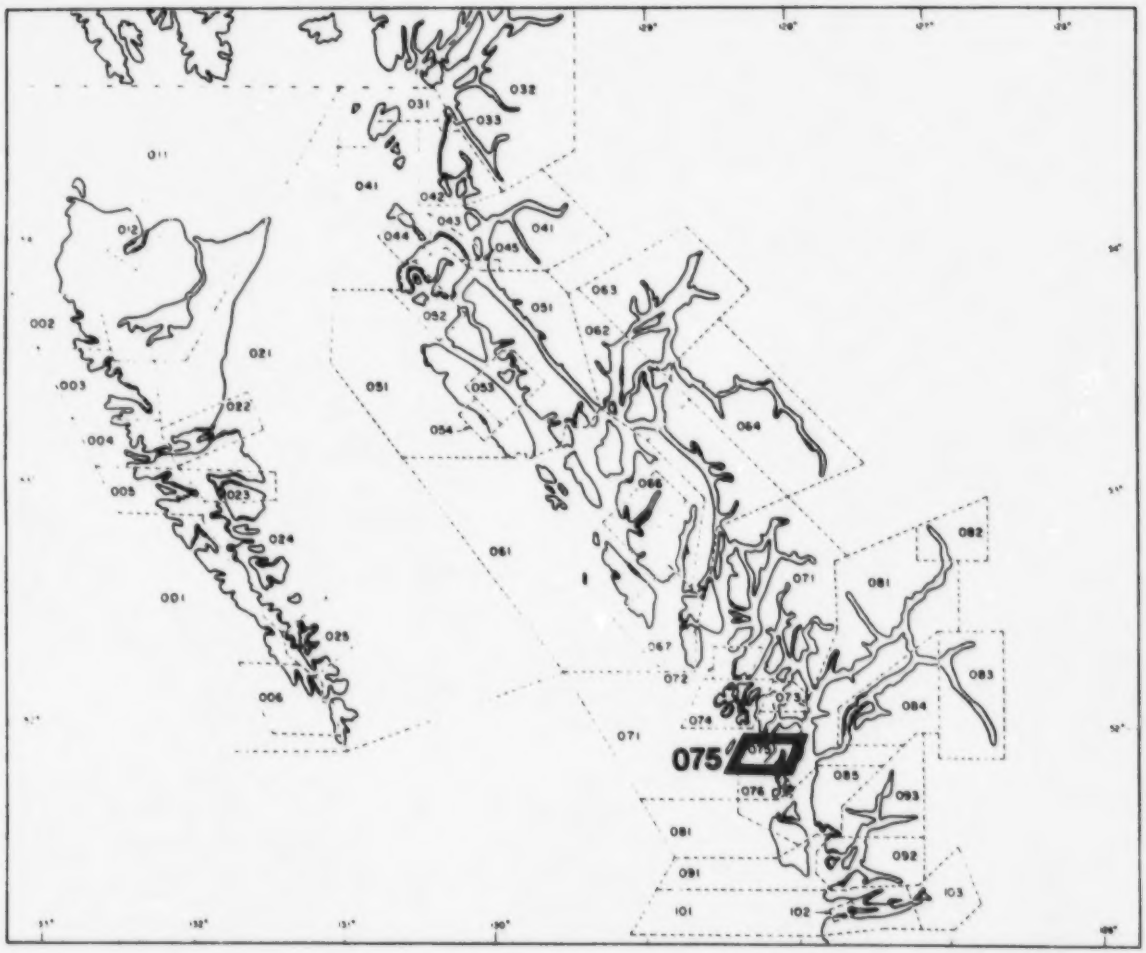


Fig. 075-1. Overview map showing location of section 075, McNaughton Group.

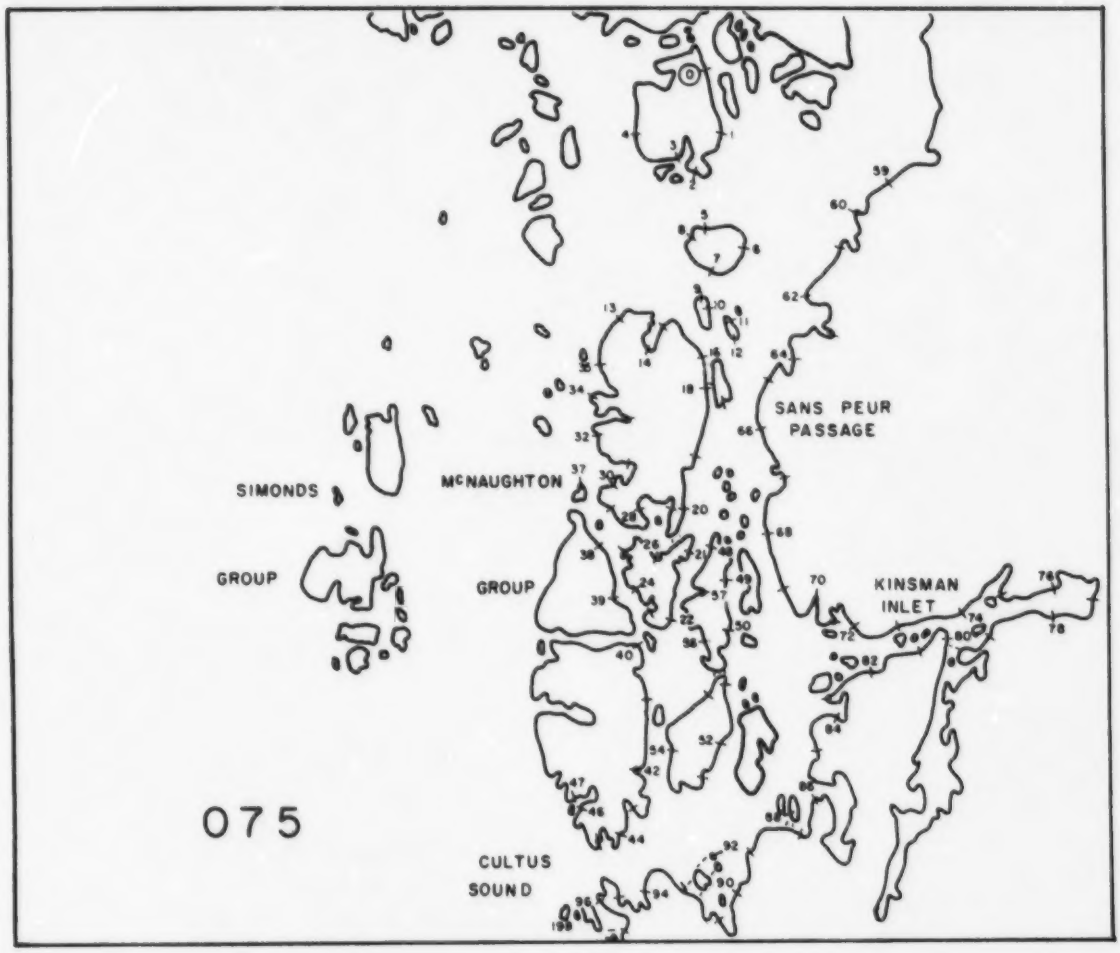


Fig. 075-2. Detailed map of section 075, McNaughton Group.

Table 075-1. Section 075 - spawn position by year.

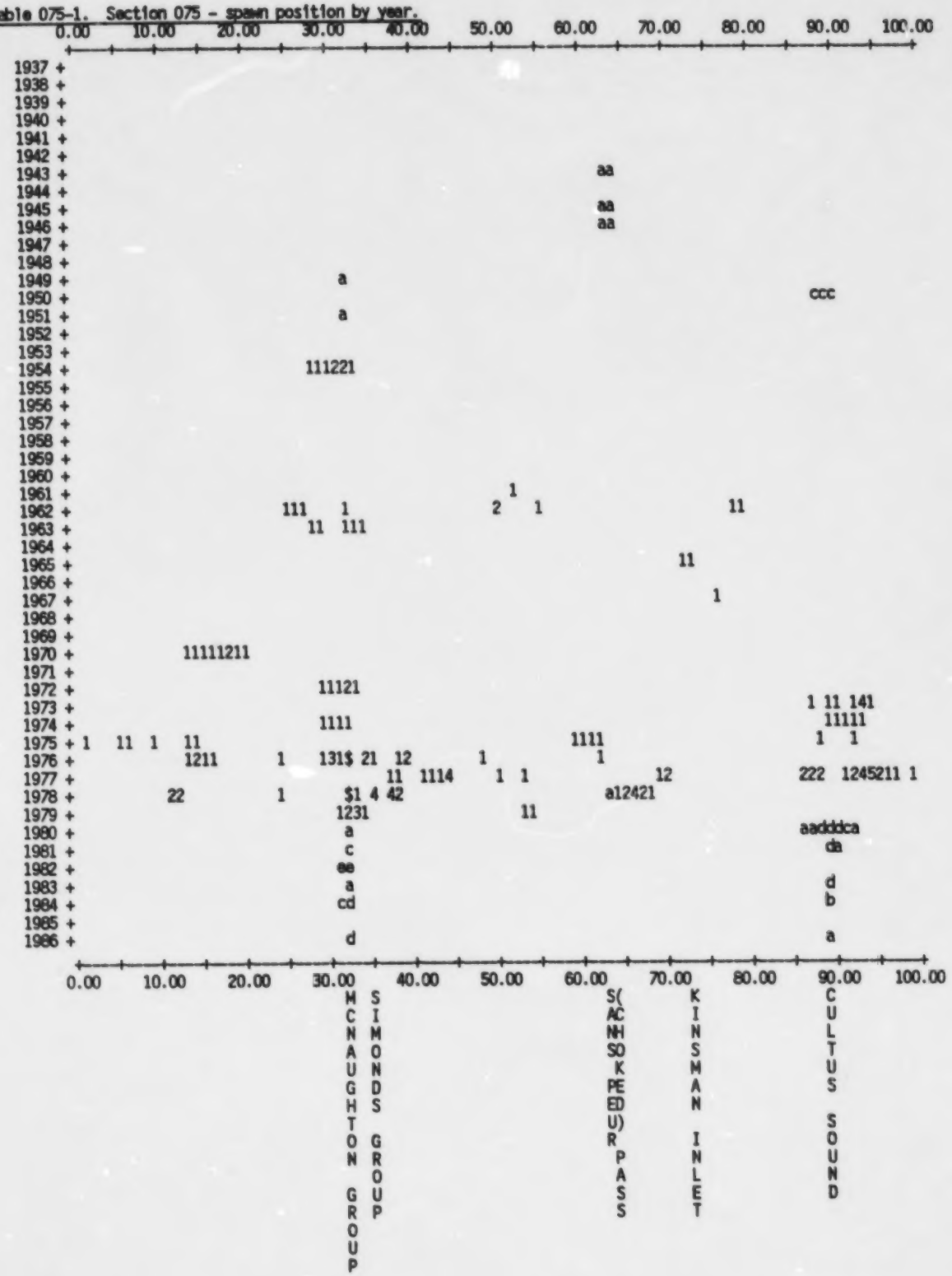


Table 075-2. Section 075 - histogram of cumulative spawn frequency over distance

position(km)

	0 5 10 15 20 25 30 35 40 45 50 55 60 65 70 75	vara	varb	varc	all
0.00	+	0	0	0	0
1.00	+*	1	0	0	1
2.00	+	0	0	0	0
3.00	+	0	0	0	0
4.00	+	0	0	0	0
5.00	+*	1	0	0	1
6.00	+*	1	0	0	1
7.00	+	0	0	0	0
8.00	+	0	0	0	0
9.00	+*	1	0	0	1
10.00	+	0	0	0	0
11.00	+**	2	0	0	2
12.00	+**	2	0	0	2
13.00	+***	3	0	0	3
14.00	+****	4	0	0	4
15.00	+**	2	0	0	2
16.00	+**	2	0	0	2
17.00	+*	1	0	0	1
18.00	+**	2	0	0	2
19.00	+*	1	0	0	1
20.00	+*	1	0	0	1
21.00	+	0	0	0	0
22.00	+	0	0	0	0
23.00	+	0	0	0	0
24.00	+**	2	0	0	2
25.00	+*	1	0	0	1
26.00	+*	1	0	0	1
27.00	+*	1	0	0	1
28.00	+**	2	0	0	2
29.00	+*****	5	0	0	5
	0 5 10 15 20 25 30 35 40 45 50 55 60 65 70 75	vara	varb	varc	all

Table 075-2 (cont'd.)

position(km)

		0 5 10 15 20 25 30 35 40 45 50 55 60 65 70 75	vara	varb	varc	all
	30.00	+******	6	0	0	6
	31.00	+******00000000	6	8	0	14
MCNAUGHTON GROUP	32.00	+************0000000000000000000000	12	23	0	35
	33.00	+*******	7	0	0	7
	34.00	+*****	4	0	0	4
SIMONDS GROUP	35.00	+*****	5	0	0	5
	36.00	+	0	0	0	0
	37.00	+*****	5	0	0	5
	38.00	+*****	4	0	0	4
	39.00	+**	2	0	0	2
	40.00	+	0	0	0	0
	41.00	+*	1	0	0	1
	42.00	+*	1	0	0	1
	43.00	+*	1	0	0	1
	44.00	+*****	4	0	0	4
	45.00	+	0	0	0	0
	46.00	+	0	0	0	0
	47.00	+	0	0	0	0
	48.00	+*	1	0	0	1
	49.00	+	0	0	0	0
	50.00	+***	3	0	0	3
	51.00	+	0	0	0	0
	52.00	+*	1	0	0	1
	53.00	+**	2	0	0	2
	54.00	+*	1	0	0	1
	55.00	+*	1	0	0	1
	56.00	+	0	0	0	0
	57.00	+	0	0	0	0
	58.00	+	0	0	0	0
	59.00	+*	1	0	0	1
	60.00	+*	1	0	0	1
	61.00	+*	1	0	0	1
	62.00	+**	2	0	0	2
SANS PEUR (CHOKED) PASS	63.00	+0000	0	4	0	4
	64.00	+*000	1	3	0	4
		0 5 10 15 20 25 30 35 40 45 50 55 60 65 70 75	vara	varb	varc	all

Table 075-2 (cont'd.)

position(km)

	0 5 10 15 20 25 30 35 40 45 50 55 60 65 70 75	vara	varb	varc	all
65.00	+**	2	0	0	2
66.00	+****	4	0	0	4
67.00	+**	2	0	0	2
68.00	+*	1	0	0	1
69.00	+*	1	0	0	1
70.00	+**	2	0	0	2
71.00	+	0	0	0	0
72.00	+*	1	0	0	1
KINSMAN INLET 73.00	+*	1	0	0	1
74.00	+	0	0	0	0
75.00	+	0	0	0	0
76.00	+*	1	0	0	1
77.00	+	0	0	0	0
78.00	+*	1	0	0	1
79.00	+*	1	0	0	1
80.00	+	0	0	0	0
81.00	+	0	0	0	0
82.00	+	0	0	0	0
83.00	+	0	0	0	0
84.00	+	0	0	0	0
85.00	+	0	0	0	0
86.00	+**0	2	1	0	3
87.00	+***0	3	1	0	4
88.00	+***0000000	3	7	0	10
CULTUS SOUND 89.00	+**00000000000000000000	2	18	0	20
90.00	+**00000000	2	8	0	10
91.00	+**000	2	3	0	5
92.00	+*****0	5	1	0	6
93.00	+*********	9	0	0	9
94.00	+******	6	0	0	6
95.00	+**	2	0	0	2
96.00	+*	1	0	0	1
97.00	+*	1	0	0	1
98.00	+	0	0	0	0
99.00	+*	1	0	0	1
100.00	+	0	0	0	0
101.00	+	0	0	0	0
	0 5 10 15 20 25 30 35 40 45 50 55 60 65 70 75	vara	varb	varc	all

Table 075-3. Herring statistical spawn summary for section 075.

Year	Total records	Spawn index	Sum length	Av wid	Av int	Av date	SE date	Wt date	Min day	Max day	Ind day	Ind loc
1937	0	0	0	0	0.0	0.0	0.00	0.0	0	0	0	0
1938	0	0	0	0	0.0	0.0	0.00	0.0	0	0	0	0
1939	0	0	0	0	0.0	0.0	0.00	0.0	0	0	0	0
1940	0	0	0	0	0.0	0.0	0.00	0.0	0	0	0	0
1941	0	0	0	0	0.0	0.0	0.00	0.0	0	0	0	0
1942	0	0	0	0	0.0	0.0	0.00	0.0	0	0	0	0
1943	1	13764	1188	16	5.0	79.0	0.00	79.0	79	79	1	1
1944	0	0	0	0	0.0	0.0	0.00	0.0	0	0	0	0
1945	1	9315	804	16	1.0	79.0	0.00	79.0	79	79	1	1
1946	1	10590	914	4	3.0	79.0	0.00	79.0	79	79	1	1
1947	0	0	0	0	0.0	0.0	0.00	0.0	0	0	0	0
1948	0	0	0	0	0.0	0.0	0.00	0.0	0	0	0	0
1949	1	2120	183	5	3.0	75.0	0.00	75.0	75	75	1	1
1950	3	55057	4752	18	7.0	91.0	0.00	91.0	91	91	1	1
1951	1	2120	183	3	3.0	91.0	0.00	91.0	91	91	1	1
1952	0	0	0	0	0.0	0.0	0.00	0.0	0	0	0	0
1953	0	0	0	0	0.0	0.0	0.00	0.0	0	0	0	0
1954	3	47653	4113	4	5.0	72.0	0.00	72.0	72	72	1	1
1955	0	0	0	0	0.0	0.0	0.00	0.0	0	0	0	0
1956	0	0	0	0	0.0	0.0	0.00	0.0	0	0	0	0
1957	0	0	0	0	0.0	0.0	0.00	0.0	0	0	0	0
1958	0	0	0	0	0.0	0.0	0.00	0.0	0	0	0	0
1959	0	0	0	0	0.0	0.0	0.00	0.0	0	0	0	0
1960	0	0	0	0	0.0	0.0	0.00	0.0	0	0	0	0
1961	1	1054	91	2	3.0	86.0	0.00	86.0	86	86	1	1
1962	6	49773	4296	24	6.0	90.5	4.21	85.1	75	100	4	2
1963	3	14830	1280	7	5.0	94.0	0.00	94.0	94	94	1	1
1964	0	0	0	0	0.0	0.0	0.00	0.0	0	0	0	0
1965	1	10590	914	5	5.0	95.0	0.00	95.0	95	95	1	1
1966	0	0	0	0	0.0	0.0	0.00	0.0	0	0	0	0
1967	1	5295	457	3	5.0	95.0	0.00	95.0	95	95	1	1
1968	0	0	0	0	0.0	0.0	0.00	0.0	0	0	0	0
1969	0	0	0	0	0.0	0.0	0.00	0.0	0	0	0	0
1970	4	53481	4616	38	6.5	80.0	0.00	80.0	80	80	1	1
1971	0	0	0	0	0.0	0.0	0.00	0.0	0	0	0	0
1972	2	38662	3337	2	2.0	101.5	0.50	101.8	101	102	2	1
1973	8	19592	1691	22	3.4	100.0	0.00	100.0	100	100	1	1
1974	3	67674	5841	8	4.7	94.0	2.52	95.3	91	99	3	2
1975	7	60143	5191	8	3.9	100.9	0.14	100.9	100	101	2	2
1976	20	60641	5234	17	3.4	95.3	2.08	96.9	76	105	9	4
1977	28	118884	10261	10	4.2	94.1	0.46	94.5	89	97	8	3
1978	25	101598	8769	15	4.1	91.4	1.62	96.2	76	103	6	2
1979	4	46066	3976	4	3.5	99.0	1.00	98.7	98	102	2	1
1980	5	148590	12825	16	3.8	87.0	0.00	87.0	87	87	1	2
1981	7	24423	2108	20	0.0	81.0	2.83	81.9	75	89	2	2
1982	5	43054	3716	17	0.0	89.6	1.40	90.4	84	91	2	1
1983	5	12281	1060	21	0.0	85.6	0.98	85.9	82	87	3	2
1984	6	21249	1834	14	0.0	95.3	1.87	93.6	91	101	3	2
1985	0	0	0	0	0.0	0.0	0.00	0.0	0	0	0	0
1986	5	13440	1160	16	0.0	106.2	1.20	107.3	105	111	2	2
All	157	1051940	90794	15	4.1	92.4	0.68	91.4	72	111	28	6

Table 075-4. Spawn summary for section 075 from 1937 to 1986.

A. GENERAL:

There are two main spawning areas in this section:
(i) McNaughton Group and
(ii) Cultus Sound

B. COMPLETENESS OF RECORDS:

The 50 year record should be reasonably complete considering proximity to the Namu cannery/fish reduction plant and fishing base. Some spawns may have been unreported in the early years before the roe fishery in 1971.

C. SPAWNING CONSISTENCY OVER TIME: FREQUENT

There have been intermittent spawnings from 1937-71 and constant spawnings from 1972-1984.

D. MAGNITUDE OF SPAWNINGS: SMALL

1. NUMBER OF SPAWN YEARS/50 YEARS	= 27/50 (1937-86)
2. NUMBER OF SPAWN YEARS/DOCUMENTED YEARS	= 27/50 (1937-86)
3. CUMULATIVE SPAWN LENGTH	= 90.8 Km.
4. CUMULATIVE SPAWN AREA	= 105.2 ha.

E. SPAWNING TIME:

1. MEAN UNWEIGHTED DATE (DOY)	= April 2 (92.4)
2. MEAN WEIGHTED DATE (DOY)	= April 1 (91.4)

F. COMMENTS:

Section 075 has a history of abundant spawns (157 from 1943 to 1986) but the records are not continuous. However, this location is immediately adjacent to Kilidit Sound (section 076), which has continuous spawn records with 427 documented since 1939. The mean spawning dates are the same for sections 075 and 076 (April 2). The distinction between this spawning area and those to the north (section 072-074) and those to the south, particularly Kwakshua Inlet (section 085) is uncertain.

G. ROE FISHERIES:

No major roe fisheries are documented.

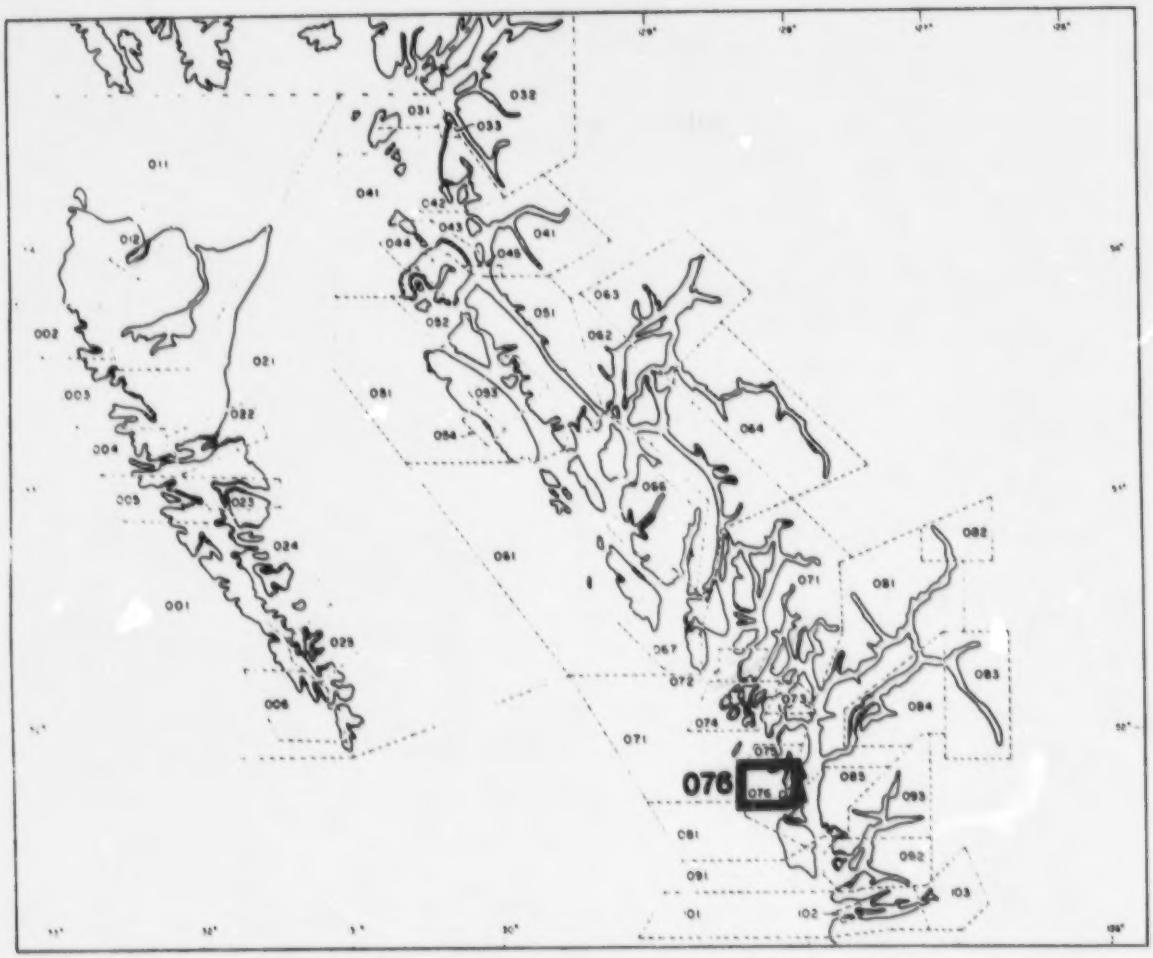


Fig. 076-1. Overview map showing location of section 076, Kildidt Sound.

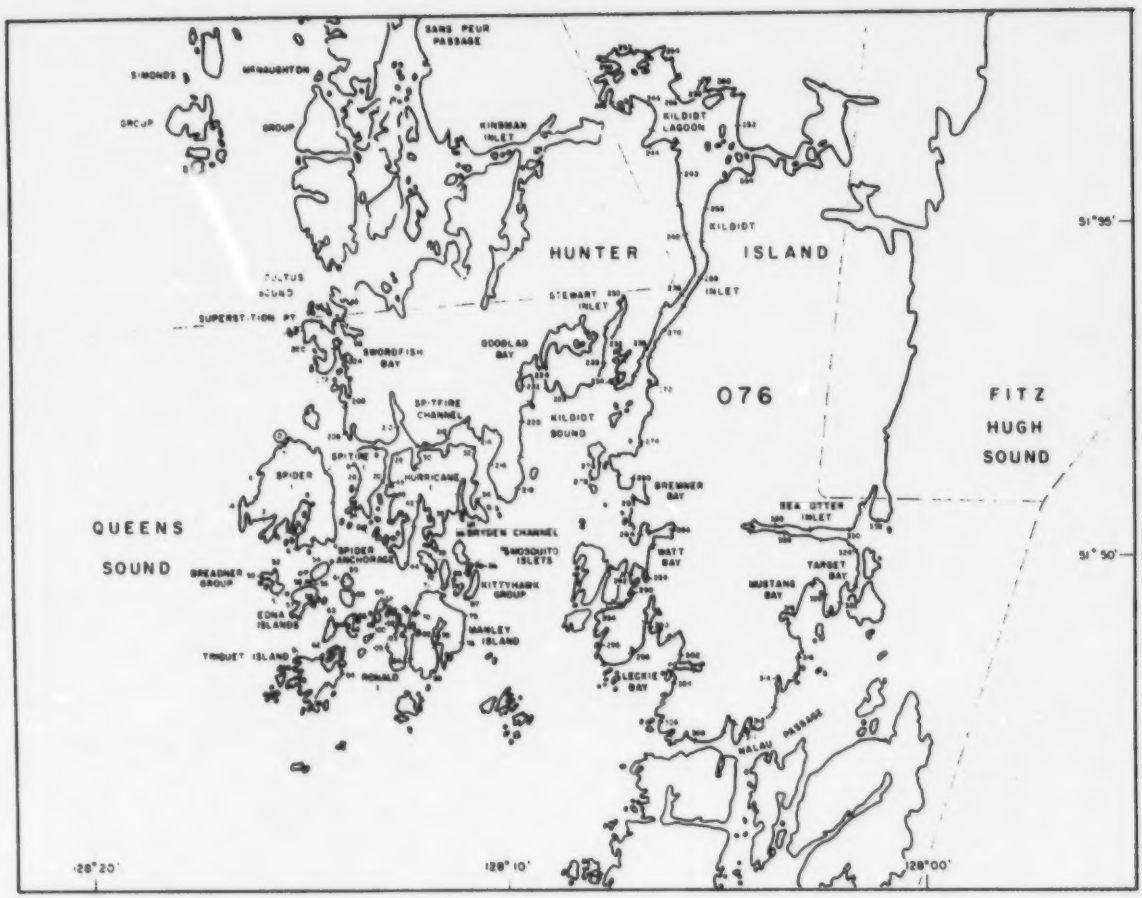


Fig. 076-2. Detailed map of section 076, Kildidt Sound.

Table 076-1. Section 076 - spawn position by year.

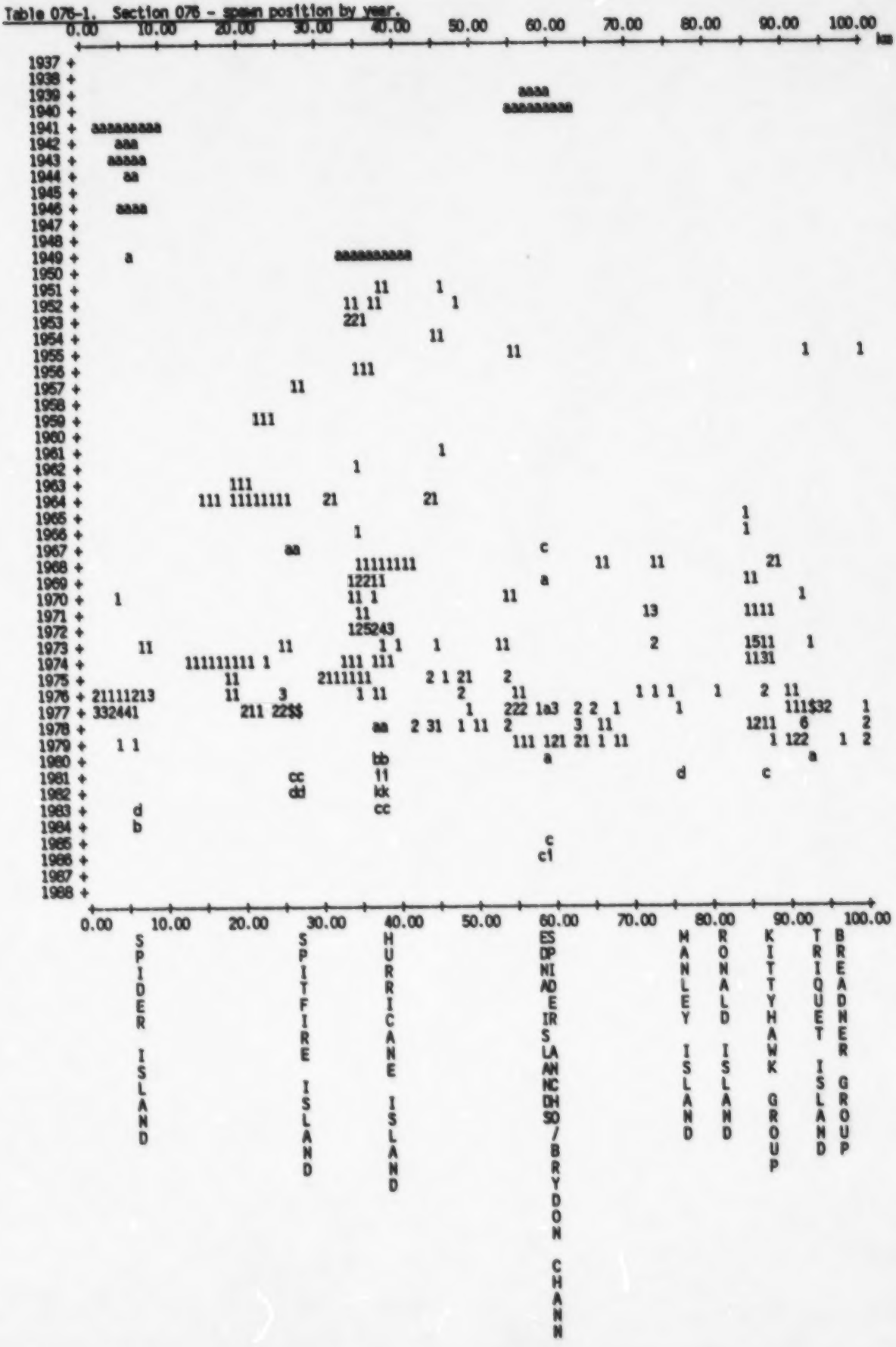


Table 076-1 (cont'd). Section 076 (cont'd) - spawn position by year.

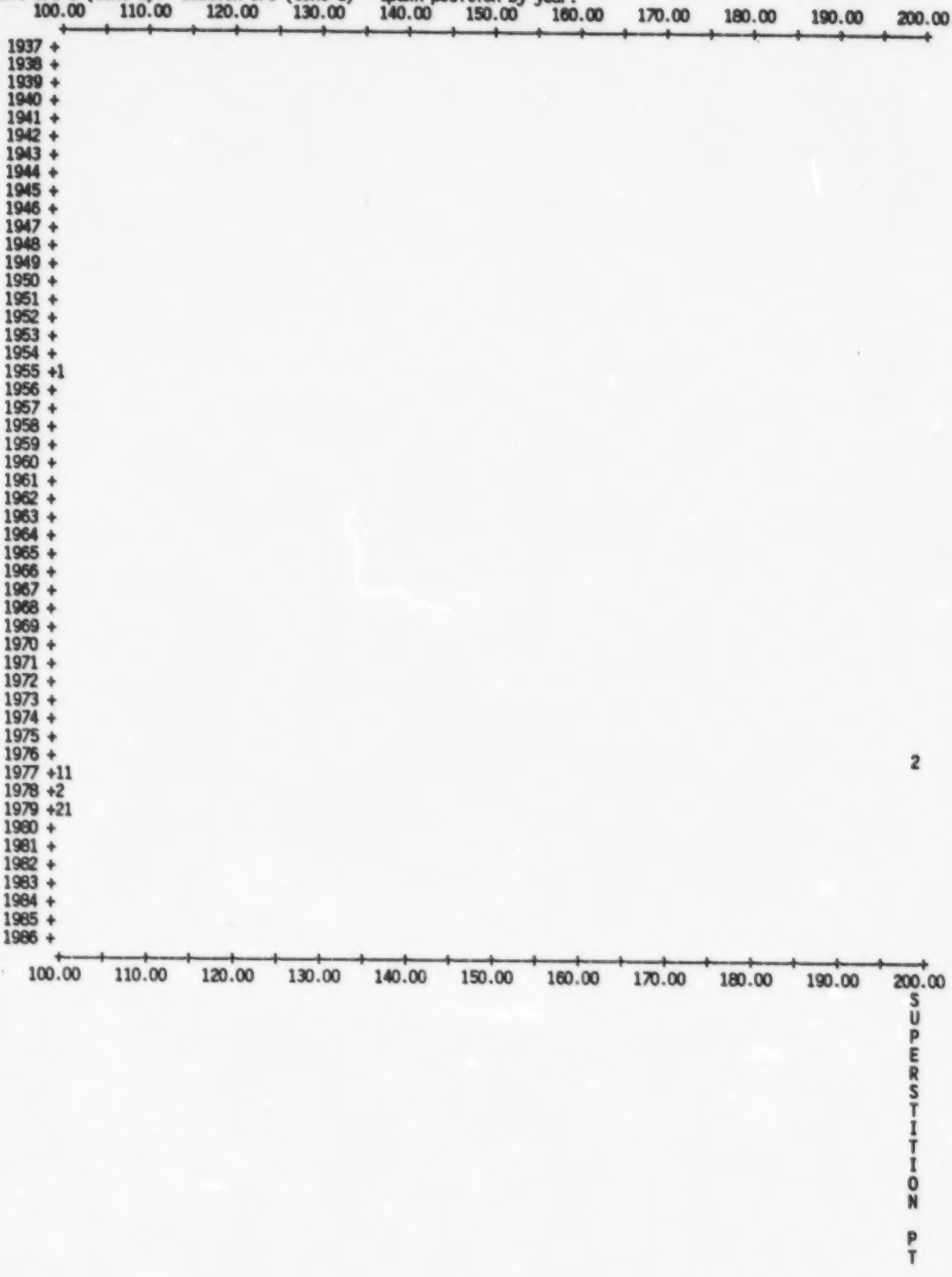


Table 076-1 (cont'd). Section 076 - spawn position by year.

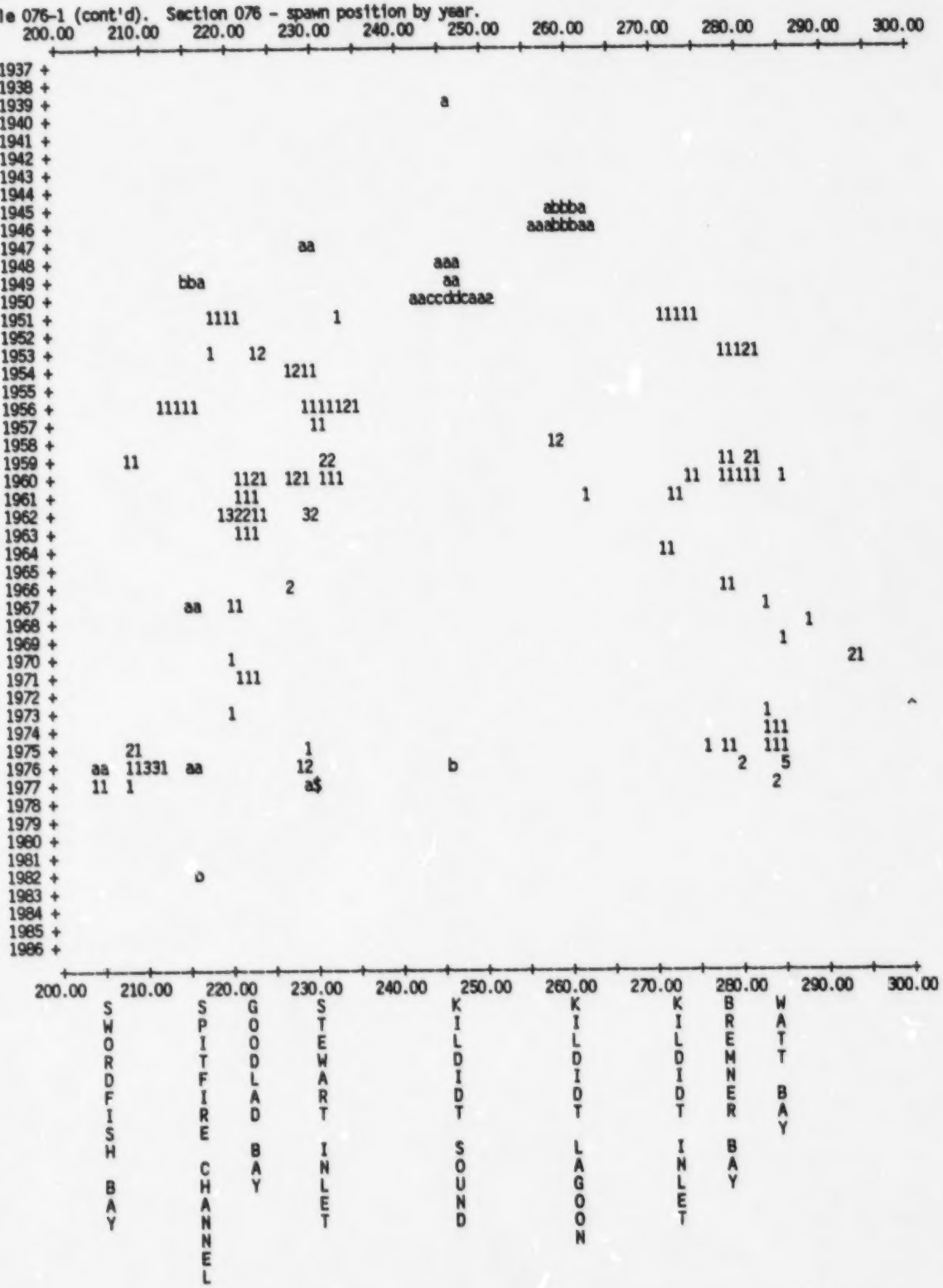


Table 076-1 (cont'd). Section 076 - spawn position by year.

```
      300.00     310.00     320.00
        +----+----+----+----+----+
1937    +
1938    +
1939    +
1940    +
1941    +
1942    +
1943    +
1944    +
1945    +
1946    +
1947    +
1948    +     aaaaa
1949    +
1950    +
1951    +
1952    +
1953    +
1954    +
1955    +                    11
1956    +                   11
1957    +
1958    +
1959    +                  1 11
1960    +
1961    +
1962    +
1963    +
1964    +
1965    +
1966    +
1967    +
1968    +                  11
1969    +                  1
1970    +
1971    +                    111121
1972    +
1973    +^^                 2
1974    +                 1
1975    +                1 1
1976    +
1977    +       1         1 11111
1978    +
1979    +
1980    +
1981    +
1982    +
1983    +
1984    +
1985    +
1986    +
        +----+----+----+----+----+
      300.00     310.00     320.00
        ~          N          MT
        L          A          UA
        E          L          SR
        C          A          TG
        K          U          AE
        I                     NT
        E          P          G
                   A           B
        B          S          BA
        A          S          AY
        Y          A          Y
                   G
                   E
```

Table 076-2. Section 076 - histogram of cumulative spawn frequency over distance

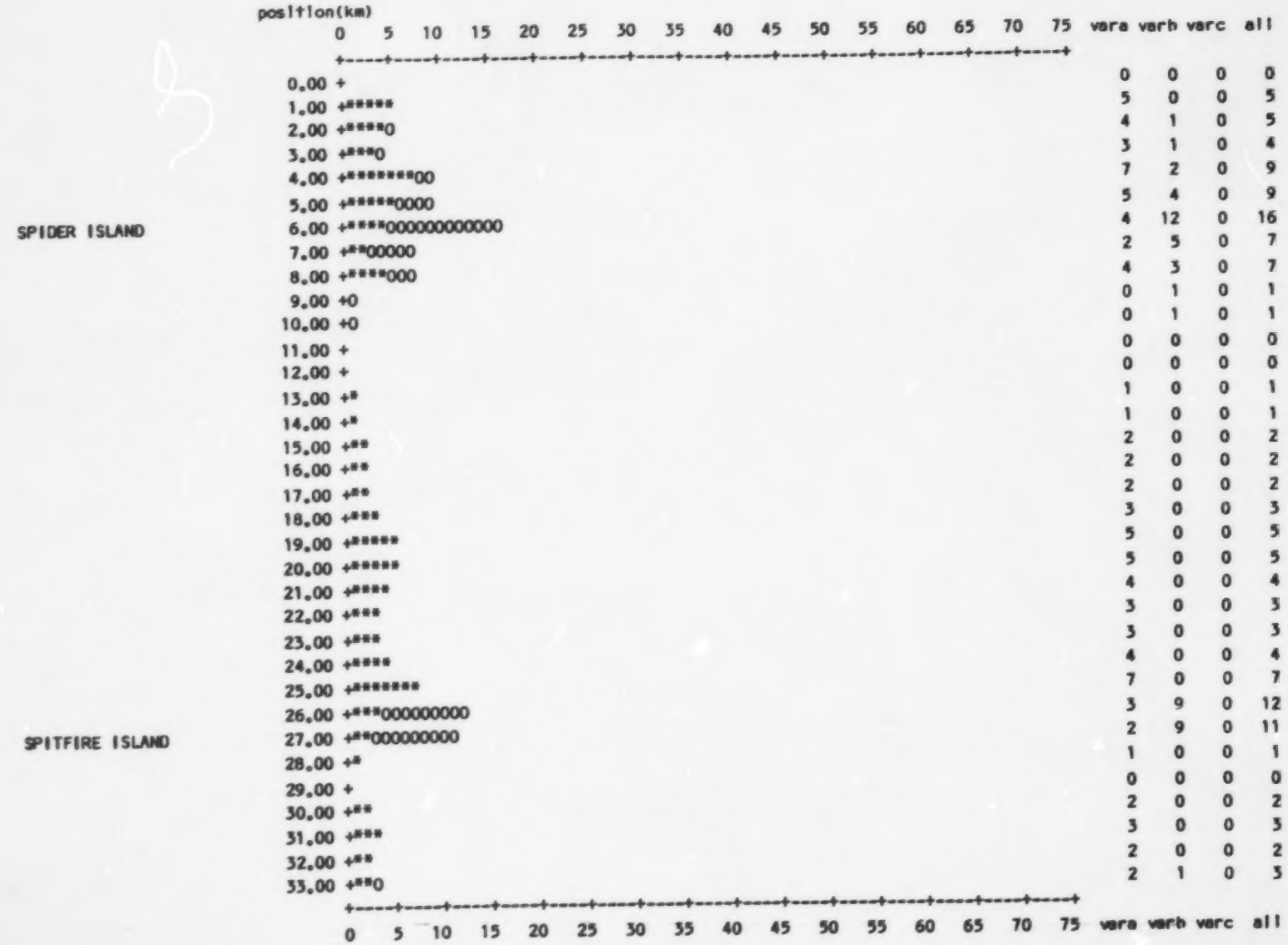


Table 076-2 (cont'd.)

	position(km)	0 5 10 15 20 25 30 35 40 45 50 55 60 65 70 75	vara	varb	varc	all
	34.00	+********0	8	1	0	9
	35.00	+*****************0	16	1	0	17
	36.00	+*************0	12	1	0	13
	37.00	+*********000000000000000000000000000	9	27	0	36
HURRICANE ISLAND	38.00	+***********000000000000000000000000000	11	27	0	38
	39.00	+*******0	6	1	0	7
	40.00	+**0	2	1	0	3
	41.00	+*0	1	1	0	2
	42.00	+***0	3	1	0	4
	43.00	+	0	0	0	0
	44.00	+*******	7	0	0	7
	45.00	+****	4	0	0	4
	46.00	+****	4	0	0	4
	47.00	+	0	0	0	0
	48.00	+******	6	0	0	6
	49.00	+**	2	0	0	2
	50.00	+*	1	0	0	1
	51.00	+*	1	0	0	1
	52.00	+	0	0	0	0
	53.00	+*	1	0	0	1
	54.00	+********	8	0	0	8
	55.00	+******0	6	1	0	7
	56.00	+*****0	5	1	0	6
	57.00	+*00	1	2	0	3
EDNA ISLANDS	58.00	+*00000	1	5	0	6
SPIDER ANCHO/BRYDON CHANN	59.00	+*0000000000000000000	1	20	0	21
	60.00	+*****00	5	2	0	7
	61.00	+*0	1	1	0	2
	62.00	+0	0	1	0	1
	63.00	+*******0	7	1	0	8
	64.00	+*	1	0	0	1
	65.00	+**	2	0	0	2
	66.00	+***	3	0	0	3
	67.00	+**	2	0	0	2
	68.00	+**	2	0	0	2
		0 5 10 15 20 25 30 35 40 45 50 55 60 65 70 75	vara	varb	varc	all

Table 076-2 (cont'd.)

position(km)

		0	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	vara	varb	varc	all
	69.00	+*																1	0	0	1
	70.00	+																0	0	0	0
	71.00	+*																1	0	0	1
	72.00	+*																1	0	0	1
	73.00	+*******																7	0	0	7
	74.00	+*																1	0	0	1
	75.00	+*																1	0	0	1
MANLEY ISLAND	76.00	+*0000																1	4	0	5
	77.00	+																0	0	0	0
	78.00	+																0	0	0	0
	79.00	+																0	0	0	0
	80.00	+																0	0	0	0
RONALD ISLAND	81.00	+*																1	0	0	1
	82.00	+																0	0	0	0
	83.00	+																0	0	0	0
	84.00	+																0	0	0	0
	85.00	+*******																7	0	0	7
	86.00	+**********																10	0	0	10
KITTYHAWK GROUP	87.00	+********000																8	3	0	11
	88.00	+*******																7	0	0	7
	89.00	+*																1	0	0	1
	90.00	+***																3	0	0	3
	91.00	+****																4	0	0	4
	92.00	+**********																10	0	0	10
TRIQUET ISLAND	93.00	+***00																3	2	0	5
	94.00	+***																3	0	0	3
	95.00	+**																2	0	0	2
BREADNER GROUP	96.00	+																0	0	0	0
	97.00	+*																1	0	0	1
	98.00	+																0	0	0	0
	99.00	+																0	0	0	0
	100.00	+******																6	0	0	6
	101.00	+**																2	0	0	2
	102.00	+																0	0	0	0
	103.00	+																0	0	0	0
		0	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	vara	varb	varc	all

Table 076-2 (cont'd.)

position(km)

	0	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	vara	varb	varc	all
104.00	+																0	0	0	0
105.00	+																0	0	0	0
106.00	+																0	0	0	0
107.00	+																0	0	0	0
108.00	+																0	0	0	0
109.00	+																0	0	0	0
110.00	+																0	0	0	0
111.00	+																0	0	0	0
112.00	+																0	0	0	0
113.00	+																0	0	0	0
114.00	+																0	0	0	0
115.00	+																0	0	0	0
116.00	+																0	0	0	0
117.00	+																0	0	0	0
118.00	+																0	0	0	0
119.00	+																0	0	0	0
120.00	+																0	0	0	0
121.00	+																0	0	0	0
122.00	+																0	0	0	0
123.00	+																0	0	0	0
124.00	+																0	0	0	0
125.00	+																0	0	0	0
126.00	+																0	0	0	0
127.00	+																0	0	0	0
128.00	+																0	0	0	0
129.00	+																0	0	0	0
130.00	+																0	0	0	0
131.00	+																0	0	0	0
132.00	+																0	0	0	0
133.00	+																0	0	0	0
134.00	+																0	0	0	0
135.00	+																0	0	0	0
136.00	+																0	0	0	0
137.00	+																0	0	0	0
138.00	+																0	0	0	0
	0	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	vara	varb	varc	all

Table 076-2 (cont'd.)

position(km)

	0	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	vara	varb	varc	all
139.00	+																0	0	0	0
140.00	+																0	0	0	0
141.00	+																0	0	0	0
142.00	+																0	0	0	0
143.00	+																0	0	0	0
144.00	+																0	0	0	0
145.00	+																0	0	0	0
146.00	+																0	0	0	0
147.00	+																0	0	0	0
148.00	+																0	0	0	0
149.00	+																0	0	0	0
150.00	+																0	0	0	0
151.00	+																0	0	0	0
152.00	+																0	0	0	0
153.00	+																0	0	0	0
154.00	+																0	0	0	0
155.00	+																0	0	0	0
156.00	+																0	0	0	0
157.00	+																0	0	0	0
158.00	+																0	0	0	0
159.00	+																0	0	0	0
160.00	+																0	0	0	0
161.00	+																0	0	0	0
162.00	+																0	0	0	0
163.00	+																0	0	0	0
164.00	+																0	0	0	0
165.00	+																0	0	0	0
166.00	+																0	0	0	0
167.00	+																0	0	0	0
168.00	+																0	0	0	0
169.00	+																0	0	0	0
170.00	+																0	0	0	0
171.00	+																0	0	0	0
172.00	+																0	0	0	0
173.00	+																0	0	0	0
	0	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	vara	varb	varc	all

Table 076-2 (cont'd.)

position(km)

		0	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	vara	varb	varc	all
	174.00	+																0	0	0	0
	175.00	+																0	0	0	0
	176.00	+																0	0	0	0
	177.00	+																0	0	0	0
	178.00	+																0	0	0	0
	179.00	+																0	0	0	0
	180.00	+																0	0	0	0
	181.00	+																0	0	0	0
	182.00	+																0	0	0	0
	183.00	+																0	0	0	0
	184.00	+																0	0	0	0
	185.00	+																0	0	0	0
	186.00	+																0	0	0	0
	187.00	+																0	0	0	0
	188.00	+																0	0	0	0
	189.00	+																0	0	0	0
	190.00	+																0	0	0	0
	191.00	+																0	0	0	0
	192.00	+																0	0	0	0
	193.00	+																0	0	0	0
	194.00	+																0	0	0	0
	195.00	+																0	0	0	0
	196.00	+																0	0	0	0
	197.00	+																0	0	0	0
	198.00	+																0	0	0	0
SUPERSTITION POINT	199.00	+**																2	0	0	2
	200.00	+																0	0	0	0
	201.00	+																0	0	0	0
	202.00	+																0	0	0	0
	203.00	+																0	0	0	0
	204.00	+*0																1	1	0	2
SWORDFISH BAY	205.00	+*0																1	1	0	2
	206.00	+																0	0	0	0
	207.00	+																0	0	0	0
	208.00	+*****																5	0	0	5
		0	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	vara	varb	varc	all

Table 076-2 (cont'd.)

position(km)

		0 5 10 15 20 25 30 35 40 45 50 55 60 65 70 75	vara	varb	varc	all
	209.00	+***	3	0	0	3
	210.00	+***	3	0	0	3
	211.00	+***	3	0	0	3
	212.00	+**	2	0	0	2
	213.00	+*	1	0	0	1
	214.00	+*	1	0	0	1
	215.00	+*0000	1	4	0	5
SPITFIRE CHANNEL	216.00	+*000000	1	6	0	7
	217.00	+0	0	1	0	1
	218.00	+**	2	0	0	2
	219.00	+**	2	0	0	2
	220.00	+*******	7	0	0	7
	221.00	+********	8	0	0	8
GOODLAD BAY	222.00	+******	6	0	0	6
	223.00	+*******	7	0	0	7
	224.00	+****	4	0	0	4
	225.00	+	0	0	0	0
	226.00	+	0	0	0	0
	227.00	+****	4	0	0	4
	228.00	+*****	5	0	0	5
	229.00	+*********00	9	2	0	11
STEWART INLET	230.00	+******00	6	2	0	8
	231.00	+******	5	0	0	5
	232.00	+*****	4	0	0	4
	233.00	+***	3	0	0	3
	234.00	+**	2	0	0	2
	235.00	+*	1	0	0	1
	236.00	+	0	0	0	0
	237.00	+	0	0	0	0
	238.00	+	0	0	0	0
	239.00	+	0	0	0	0
	240.00	+	0	0	0	0
	241.00	+	0	0	0	0
	242.00	+0	0	1	0	1
	243.00	+0	0	1	0	1
		0 5 10 15 20 25 30 35 40 45 50 55 60 65 70 75	vara	varb	varc	all

Table 076-2 (cont'd.)

	position(km) 0 5 10 15 20 25 30 35 40 45 50 55 60 65 70 75	vara	varb	varc	all
	244.00 +000	0	3	0	3
	245.00 +0000	0	4	0	4
KILDIDT SOUND	246.00 +0000000000	0	9	0	9
	247.00 +000000	0	6	0	6
	248.00 +000	0	3	0	3
	249.00 +0	0	1	0	1
	250.00 +0	0	1	0	1
	251.00 +0	0	1	0	1
	252.00 +	0	0	0	0
	253.00 +	0	0	0	0
	254.00 +	0	0	0	0
	255.00 +	0	0	0	0
	256.00 +0	0	1	0	1
	257.00 +0	0	1	0	1
	258.00 +*00	1	2	0	3
	259.00 +**0000	2	4	0	6
KILDIDT LAGOON	260.00 +0000	0	4	0	4
	261.00 +0000	0	4	0	4
	262.00 +*00	1	2	0	3
	263.00 +0	0	1	0	1
	264.00 +	0	0	0	0
	265.00 +	0	0	0	0
	266.00 +	0	0	0	0
	267.00 +	0	0	0	0
	268.00 +	0	0	0	0
	269.00 +	0	0	0	0
	270.00 +	0	0	0	0
	271.00 +**	2	0	0	2
KILDIDT INLET	272.00 +***	3	0	0	3
	273.00 +**	2	0	0	2
	274.00 +**	2	0	0	2
	275.00 +**	2	0	0	2
	276.00 +*	1	0	0	1
	277.00 +	0	0	0	0
BREMNER BAY	278.00 +*****	5	0	0	5
	0 5 10 15 20 25 30 35 40 45 50 55 60 65 70 75	vara	varb	varc	all

Table 076-2 (cont'd.)

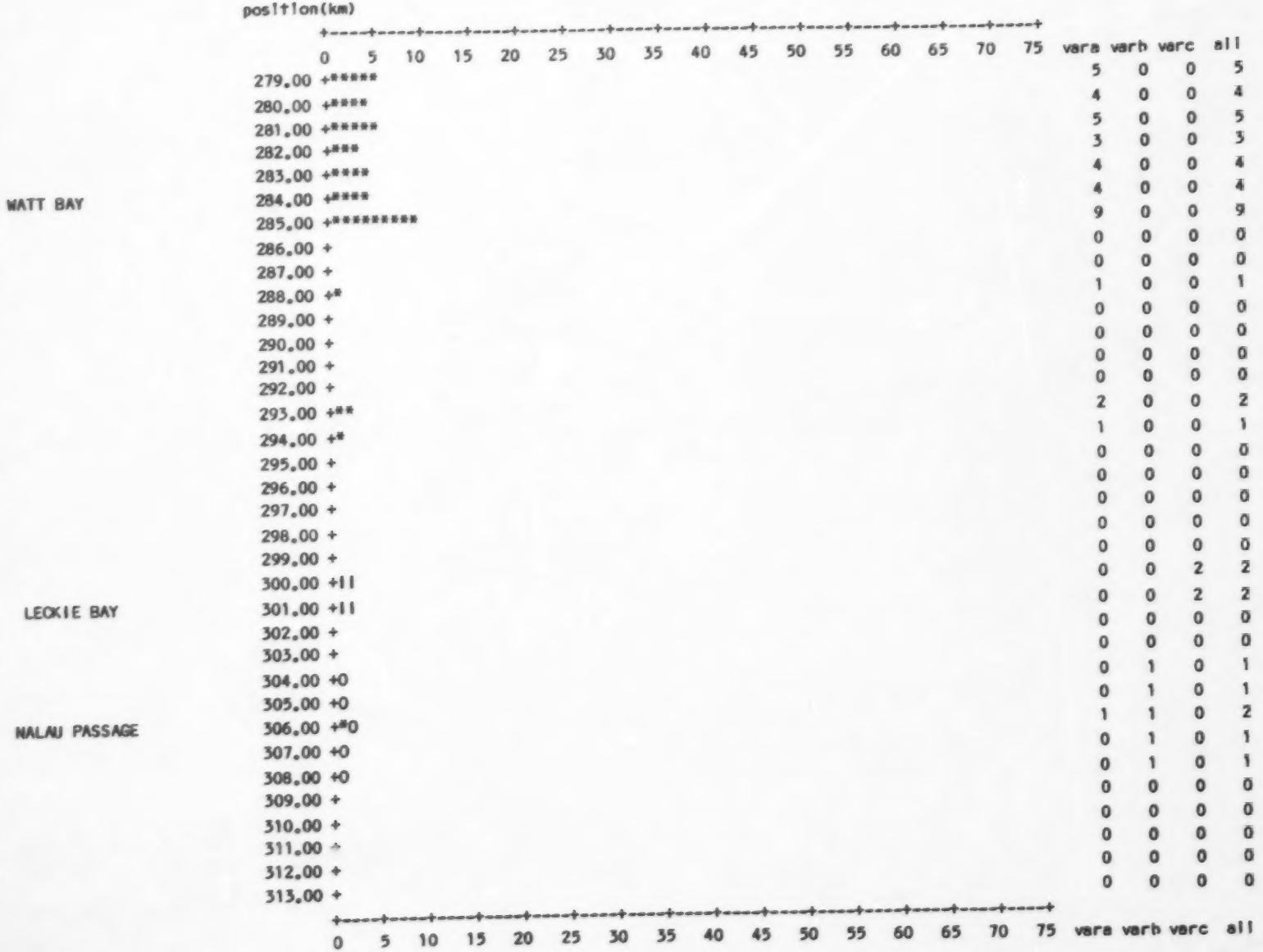


Table 076-2 (cont'd.)

position(km)

		0	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	vara	varb	varc	all
	314.00	+																0	0	0	0
	315.00	+**																2	0	0	2
	316.00	+***																3	0	0	3
	317.00	+******																6	0	0	6
MUSTANG BAY	318.00	+***																3	0	0	3
TARGET BAY	319.00	+*****																5	0	0	5
	320.00	+****																4	0	0	4
	321.00	+**																2	0	0	2
	322.00	+**																2	0	0	2
	323.00	+*																1	0	0	1
	324.00	+*																1	0	0	1
	325.00	+I																0	0	1	1
SEA OTTER INLET	326.00	+I																0	0	1	1
	327.00	+																0	0	0	0
		0	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	vara	varb	varc	all

Table 076-3. Herring statistical spawn summary for section 076.

Year	Total records	Spawn index	Sum length	Av wid	Av int	Av date	SE date	Wt date	Min day	Max day	Ind day	Ind loc
1937	0	0	0	0	0.0	0.0	0.00	0.0	0	0	0	0
1938	0	0	0	0	0.0	0.0	0.00	0.0	0	0	0	0
1939	2	49005	3619	0	7.0	87.5	3.50	84.8	84	91	2	2
1940	1	108910	8043	0	7.0	89.0	0.00	89.0	89	89	1	1
1941	1	108910	8043	0	7.0	76.0	0.00	76.0	76	76	1	1
1942	1	30318	2239	34	9.0	82.0	0.00	82.0	82	82	1	1
1943	1	43561	3217	11	5.0	76.0	0.00	76.0	76	76	1	1
1944	1	10887	804	18	9.0	92.0	0.00	92.0	92	92	1	1
1945	2	71293	5265	9	4.0	79.0	0.00	79.0	79	79	1	1
1946	3	172038	12705	6	7.0	84.7	3.18	84.4	79	90	3	2
1947	1	24753	1828	5	3.0	86.0	0.00	86.0	86	86	1	1
1948	3	94069	6947	8	5.0	88.3	2.03	89.2	85	92	3	3
1949	5	174503	12887	6	4.6	82.6	4.23	86.6	75	96	4	4
1950	4	238254	17595	10	6.0	84.0	0.00	84.0	84	84	1	1
1951	5	110765	8180	4	4.2	94.0	1.22	95.8	91	96	2	5
1952	3	30941	2285	4	5.0	85.0	0.00	85.0	85	85	1	1
1953	7	100637	7432	8	6.4	80.4	0.37	80.8	79	81	2	5
1954	3	43318	3199	5	7.0	74.0	0.00	74.0	74	74	1	2
1955	5	37129	2742	4	5.4	77.8	0.49	77.7	77	79	2	3
1956	5	172038	12705	5	5.8	89.0	4.00	87.0	85	105	2	3
1957	2	16087	1188	6	3.0	75.0	0.00	75.0	75	75	1	2
1958	2	21043	1554	4	4.0	78.0	0.00	78.0	78	78	1	1
1959	10	84171	6216	5	4.6	82.6	0.52	82.0	80	84	4	6
1960	8	160271	11836	10	6.3	92.1	0.91	91.3	89	94	2	4
1961	4	48260	3564	18	5.0	85.8	5.44	87.6	71	97	4	4
1962	9	81056	5986	21	5.7	95.4	1.72	92.9	92	103	3	3
1963	2	47028	3473	6	6.0	85.0	1.00	85.1	84	86	2	2
1964	7	159662	11791	20	5.6	85.7	1.80	86.0	82	96	3	3
1965	1	3710	274	5	5.0	98.0	0.00	98.0	98	98	1	1
1966	5	18551	1370	8	3.4	106.8	4.80	98.8	88	114	4	4
1967	7	42695	3153	13	3.6	89.6	2.98	90.3	78	97	4	6
1968	9	105200	7769	9	4.9	89.4	3.30	80.8	76	99	5	5
1969	7	73257	5410	9	4.4	91.4	1.46	93.0	83	94	5	4
1970	8	58172	4296	8	4.3	87.1	4.45	85.3	68	103	5	5
1971	10	148531	10969	5	5.0	99.5	0.89	99.4	92	103	3	4
1972	15	55071	4067	10	3.7	105.4	0.52	105.3	103	107	2	1
1973	22	66473	4909	22	3.0	95.7	1.44	97.8	81	100	5	11
1974	12	190915	14099	34	3.7	98.1	3.34	96.9	77	106	6	6
1975	23	109709	8102	28	4.0	91.8	2.34	92.5	73	101	4	6
1976	46	219242	16191	17	2.7	96.5	1.27	97.3	75	105	16	17
1977	59	219134	16183	20	4.0	91.6	0.93	92.3	72	104	14	12
1978	27	59201	4372	26	3.1	90.2	1.02	90.9	65	94	5	5
1979	18	88450	6532	22	3.3	97.0	1.00	97.2	80	98	2	5
1980	4	10020	740	22	3.5	88.0	0.58	88.6	87	89	2	3
1981	19	43710	3228	27	0.0	83.6	0.11	83.6	83	84	2	4
1982	17	42275	3122	8	0.0	91.4	1.09	93.3	84	96	4	3
1983	7	34800	2570	5	0.0	85.0	0.00	85.0	85	85	1	2
1984	2	2573	190	13	0.0	105.0	0.00	105.0	105	105	1	1
1985	3	7448	550	6	0.0	82.0	0.00	82.0	82	82	1	1
1986	9	60596	4475	11	0.0	96.7	1.76	95.5	94	106	2	2
All	427	3898643	287914	16	4.1	91.6	0.44	88.9	65	114	42	27

Table 076-4. Spawn summary for section 076 from 1937 to 1986.

A. GENERAL:

There are three main spawning areas in this section:
(i) Spider Anchorage
(ii) Kilidt Sound and
(iii) Mustang Bay

B. COMPLETENESS OF RECORDS:

The 50 year record should be reasonably complete considering proximity to the Namu cannery/fish reduction plant and fishing base.

C. SPAWNING CONSISTENCY OVER TIME: CONSTANT

If pooled among all localities, there has been a constant annual record of spawnings since 1939.

D. MAGNITUDE OF SPAWNINGS: MEDIUM

1. NUMBER OF SPAWN YEARS/50 YEARS	= 48/50 (1937-86)
2. NUMBER OF SPAWN YEARS/DOCUMENTED YEARS	= 48/48 (1939-86)
3. CUMULATIVE SPAWN LENGTH	= 287.9 Km.
4. CUMULATIVE SPAWN AREA	= 389.9 ha.

E. SPAWNING TIME:

1. MEAN UNWEIGHTED DATE (DOY)	= April 2 (91.6)
2. MEAN WEIGHTED DATE (DOY)	= March 31 (88.9)

F. COMMENTS:

Section 076 has had continuous spawns with 427 documented since 1939. The mean spawning dates are the same as section 075 to the north (April 2). The distinction between this spawning area and those to the north (072-074) and those to the south, particularly Kwakshua Inlet (section 085) is uncertain.

G. ROE FISHERIES:

1. NUMBER OF SEINE FISHERY YEARS/15 YEARS	= 5/15 (1972-86)
2. NUMBER OF GILLNET FISHERY YEARS/15 YEARS	= 4/15 (1972-86)
3. MEAN SEINE CATCH/YEAR	= 4008 tons
4. MEAN GILLNET CATCH/YEAR	= 2713 tons (area 7)

Table 076-5. History of roe fishery catches by gear type in Kildidt Sound.

SECT. 076	SEINE NET ROE FISHERIES				GILLNET ROE FISHERIES			
YEAR	DATE OPEN (D/Mo)	TIME OPEN (hrs)	HAILED CATCH (Tons)	FISHING AREA	DATE OPEN (D/Mo)	TIME OPEN (hrs)	HAILED CATCH (Tons)	FISHING AREA
1972	04/03-25/03	480	6525	Kildidt Snd.	-	-	-	-
1973	07/03-23/03	384	(6150)	Kildidt Snd. & sect. 74	07/03-23/03	384	(1200)	Kildidt Snd. & sect. 74
1974	-	-	-	-	06/03-22/03	384	(3400)	Spider Anch. & sect. 74
1975	-	-	-	-	02/03-01/04	720	(3539)	all area 7
1976	24/03	-	1864	Kildidt Snd.	-	-	-	-
&	28/03	3.3	2548	Kildidt Snd.				
1977	24/03	4.5	2410	Kildidt Snd.	-	-	-	-
1978	29/03	3.5	2686	Kildidt Snd.	05/03-25/03	384	(8040)	all area 7
1979	-	-	-	-	-	-	-	-
1980	-	-	-	-	-	-	-	-
1981	-	-	-	-	-	-	-	-
1982	-	-	-	-	-	-	-	-
1983	-	-	-	-	-	-	-	-
1984	-	-	-	-	-	-	-	-
1985	-	-	-	-	-	-	-	-
1986	-	-	-	-	-	-	-	-